

Big Creek Analysis Area
Environmental Assessment

Myrtlewood Resource Area

Coos Bay District

EA Number OR 128-98-11

TABLE OF CONTENTS

I. PURPOSE AND NEED FOR ACTION	1
Scoping	2
Identified Issues	2
Management Objectives	3
Issues Identified and Analyzed then Eliminated from Further Consideration:	4
Alternatives Considered But Eliminated From This Action	4
II. ALTERNATIVES INCLUDING THE PROPOSED ACTION	6
Alternative I - No Action	6
Alternative II - Proposed Action	6
Alternative III - Alternative Action	9
Summary of Consequences	12
III. AFFECTED ENVIRONMENT	13
IV. ENVIRONMENTAL CONSEQUENCES	16
Alternative I - No Action	16
Direct and Indirect Effects	16
Cumulative Effects	18
Alternative II - Proposed Action	19
Direct and Indirect Effects	19
Cumulative Effects	24
Alternative III - Alternative Action	26
Direct and Indirect Effects	26
Cumulative Effects	29
Other Environmental Effects	30
V. LIST OF PREPARERS	35

Maps

Vicinity Map	5
Alternative II - Proposed Action - Harvest Units	8
Alternative III - Alternative Action - Harvest Units	11

Appendix

Appendix 1	Design Features for Action Alternatives and Monitoring
Appendix 2	Harvest Unit Details
Appendix 3	Road Construction, Improvement, and Renovation Maps
Appendix 4	Road Closure Recommendations

Analysis File - available at the Coos Bay District Office

Section A	Public Input
Section B	Issues Identified and Analyzed then Eliminated from Further Consideration:
Section C	Units Considered and Eliminated From This Action
Section D	Transportation Management Objectives
Section E	Silviculture and Stand Exam Reports
Section F	Soils Specialist's Report
Section G	Design Features including Harvest and Reserve Tree Marking Guidelines
Section H	Timber Sale Planning
Section I	Wildlife Specialist's Report
Section J	Fisheries Specialist's Report
Section K	Aquatic Conservation Strategy Analysis
Section L	Port-Orford-Cedar Analysis
Section M	Hydrologist's Report
Section N	Botanist's Report
Section O	Riparian Reserve Adjustments
Section P	Site Potential Tree Determination
Section Q	15% Standard and Guide Analysis
Section R	Hazardous Materials Report

I. PURPOSE AND NEED FOR ACTION

The Bureau of Land Management (BLM) proposes to implement forest management activities in the Big Creek Analysis Area. The analysis area is approximately 28 miles southeast of Coos Bay, Oregon near the town of Bridge. It includes the Big Creek, Brownson Creek, Fall Creek, Bear Pen Creek, Axe Creek, and Jones Creek drainages that are tributary to Middle Fork Coquille River. The total analysis area is 16,661 acres in size. The BLM manages 9,021 acres (54%) of the analysis area; the Coquille Tribal Forest manages 1,047 acres (6%), and the remaining lands are private. The proposed harvest activities are located in T28S-R10W, T29S-R10W, and T29S-R11W; Willamette Meridian of Coos County.

The purpose of this Environmental Assessment (EA) is to analyze the effects of harvesting timber from this analysis area and actions associated with the timber sales. The proposed actions would contribute to the District's decadal Allowable Sale Quantity (ASQ).

The Proposed Action includes: 239 acres of regeneration harvest, 245 acres of commercial thinning, and 14 acres of hardwood/brush conversion in the General Forest Management Area (GFMA); 110 acres of regeneration harvest, 11 acres of density management thinning, and 14 acres of hardwood conversion in Connectivity¹. The commercial thinning (GFMA) and density management thinning in Connectivity acreage includes 90 acres of density management in the Riparian Reserves. Planned harvest systems include ground-based and skyline yarding. The proposed projects would include 2.0 miles of semi-permanent² road construction (all of which would be decommissioned or fully decommissioned after harvest), 14.1 miles of road renovation, 0.9 miles of road improvement, 0.2 miles of designated skid road, and closure of 10.6 miles of existing roads. The proposed projects could be accomplished by timber sale contracts sold in Fiscal Year (FY) 1999, FY 2000, and FY 2001.

Areas considered for timber harvest are outside of Murrelet Reserves and other Late Successional Reserves (LSRs).

This EA is tiered to the *Final - Coos Bay District Proposed Resource Management Plan*, (FRMP, BLM, 1994), which is in conformance with the *Final Supplemental Environmental Impact Statement on Management of Habitat for the Late Successional and Old Growth Forest Related Species Within the Range of the Northern Spotted Owl* and its Record of Decision (ROD), (Northwest Forest Plan, Interagency, 1994). It is also tiered to the *Environmental Assessment to Change the Schedule for Survey and Manage and Protection Buffer Species* (S&M EA), (see BLM Instruction Memo No. OR-99-047).

This EA incorporates by reference the *Port-Orford-Cedar Management Guidelines* (BLM 1994)(detailed evaluation is contained in Section L of the Analysis File); the *Western Oregon*

¹ Connectivity is a land use allocation within Matrix, managed on a 150-year area control rotation.

² Newly constructed roads decommissioned within one year after completion of timber sale activities associated with the harvest unit they were built to access.

Program - Management of Competing Vegetation, (FEIS, BLM 1989); the *Western Oregon Transportation Management Plan* (BLM 1996); and the *Big Creek Watershed Analysis* (BLM 1997). Actions described in this EA are in conformance with the Aquatic Conservation Strategy (ACS) Objectives listed on page B-11 and the Standards and Guidelines for Riparian Reserves on pages C-31 to C-37 of the Northwest Forest Plan. A detailed analysis of the consistency of the action alternatives with the ACS is contained in Section K of the Analysis File. These documents are available for review at the Coos Bay District Office of the BLM, North Bend, Oregon.

The actions proposed in this EA are consistent with Oregon's Coastal Salmon Restoration Initiative (CSRI), the Coquille Watershed Association Action Plan (CWAAP), the U.S. Fish and Wildlife Service's September 22, 1998 Biological Opinion on FY1999-2000 timber sales, and the National Marine Fisheries Service's March 18, 1997 Biological Opinion and Conference Opinion on programmatic activities covered in the Coos Bay District's FRMP.

The Analysis File contains additional information used by the interdisciplinary team (IDT) to analyze impacts and alternatives and is hereby incorporated by reference.

Scoping

The scoping process identified the agency and public concerns relating to the proposed projects and defined the issues and alternatives that would be examined in detail in the EA. The general public was informed of the planned EA through letters to those on the Resource Area's mailing list, those receiving the Coos Bay *Planning Update*, and through the District's Internet site. The scoping letter, mailing list, and public responses are in Section A of the Analysis File.

Scoping by the IDT identified four issues.

Identified Issues

1. Landscape Pattern

Key Indicators: Late-successional forest characteristics
Habitat connections

2. Contribute to the District's Allowable Sale Quantity (ASQ)³

Key Indicators: Estimated timber volume (thousand board feet)
Estimated timber volume from Connectivity (thousand board feet)

³ The ASQ would contribute to the decadal ASQ for the District. This is not intended to be the ASQ that would be sustained in the analysis area for future decades.

3. Riparian Reserve Functions

Key Indicators: Large woody debris (LWD) recruitment potential
Riparian Reserve species

4. Roads

Key Indicators: Open road density
Impacts to resources

Management Objectives

- ! Commercially thin GFMA stands to enhance growth rates, maintain good crown ratios, manage species composition, capture mortality of small trees, and produce larger, more valuable logs for the future.
- ! Conduct density management thinnings in Connectivity and Riparian Reserves to accelerate growth of trees which would later provide large-diameter snags and down logs, promote the development of understory vegetation, harvest mortality of small trees as the stand develops, maintain good crown ratios, and manage species composition. Density management thinnings in Connectivity would also produce larger, more valuable logs for the future.
- ! Maintain or enhance resource values within Riparian Reserves to meet the ACS objectives.
- ! Manage BLM-controlled road systems through various types of road closures and decommissioning to maintain or improve wildlife habitats, water quality, and hydrologic function. Reduce the open road density in accordance with the Transportation Management Objectives on BLM-managed lands in the proposed action area.
- ! Contribute to the District's decadal ASQ volume commitment. Address socio-economic commitment by promoting the production of merchantable timber through multiple timber sales from GFMA.
- ! Maintain legacy components in GFMA regeneration harvest units through retention of green trees, snags, and coarse wood.
- ! Limit spread of Port-Orford-cedar (POC) root rot disease (*Phytophthora lateralis* - PL) in the high risk areas (adjacent to roads and in riparian areas) and maintain POC as a species in low risk areas.
- ! Re-establish conifer stands on sites where hardwoods or brush became established following previous harvest of conifer.

Issues Identified and Analyzed then Eliminated from Further Consideration:

Fisheries
Survey and Manage Species
Special Status Species
Water Quality limited 303(d) streams (summer temperature)
Natural Disturbance Patterns
Fragmentation/Interior Habitats
Port-Orford-Cedar Population Viability
Sediment Delivery

Reasons for elimination are included in Section B of the Analysis File.

Alternatives Considered But Eliminated From This Action

The Big Creek Watershed Analysis identified approximately 989 acres of potential regeneration harvest and 277 acres of potential commercial thinning within GFMA. Potential regeneration harvest units consisted of stands over 60 years of age (based on Forest Operation Inventory data) that were outside of any known Threatened and Endangered (T&E) species sites, Riparian Reserves, LSR, and Timber Productivity Capability Classification (TPCC). Since the Big Creek Watershed Analysis, several potential harvest units identified as murrelet occupied sites were eliminated from any further consideration.

The ID team identified 41 potential harvest units to consider which included: regeneration harvest and commercial thinning units in the GFMA identified in the watershed analysis, commercial thinning units identified since watershed analysis was completed, regeneration harvest units in Connectivity, and density management thinning units in Connectivity. Density management thinning units in Connectivity consisted of stands 35-50 years of age that were of a composition and density that would benefit from thinning. A map of the units not included in the action alternatives, and rationale for their elimination, can be found in Section C of the Analysis File.

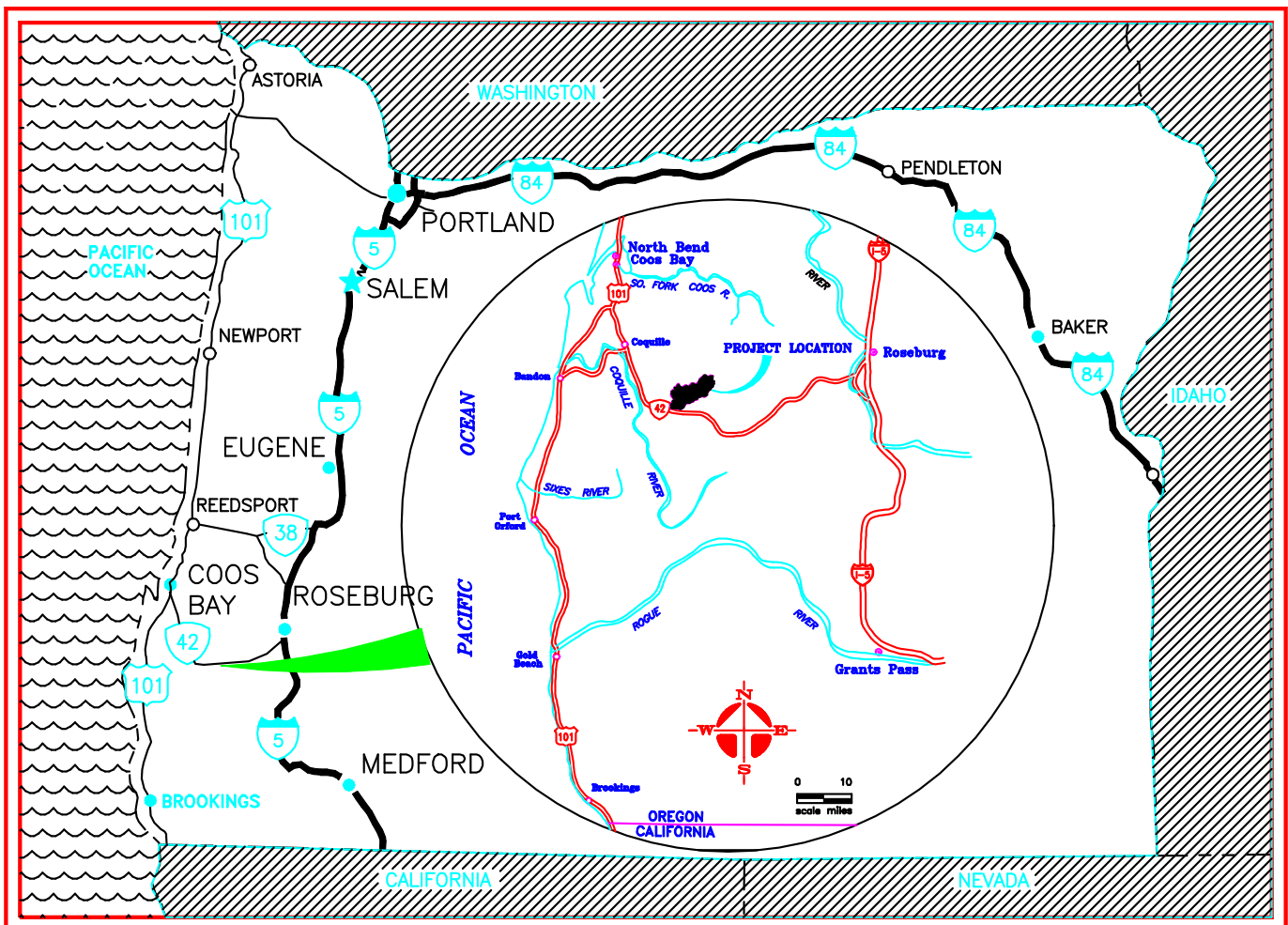
Of the 41 potential harvest units, portions of some regeneration harvest units were eliminated from consideration due to presence of previously unidentified streams. In addition, some potential commercial thinning and density management thinning in Connectivity units (or portions of units) were eliminated because their current stocking levels did not justify thinning.

No units identified in the Big Creek Watershed Analysis as Priority 3 are proposed for harvest (EA Units 1, 13, 13a, 14, 14a, 15, 16, 17, and 18). The primary reason for excluding these units was to minimize fragmentation in stands offering substantial interior forest habitat for wildlife. Also, road construction associated with harvesting these units could involve longer, permanent roads across streams which are currently unroaded.

Vicinity Map

Big Creek Analysis Area EA

Myrtlewood Resource Area Coos Bay District BLM



II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

Alternative I - No Action

Under this alternative, no timber harvest or associated management activities would occur within the Big Creek Analysis Area at this time. Meeting the District's decadal ASQ volume commitment would have to be accomplished from other analysis areas.

Alternative II - Proposed Action

This alternative consists of 11 regeneration harvest units in the GFMA (239 acres), 4 regeneration harvest units in Connectivity (110 acres), 6 commercial thinning units in GFMA (245 acres), 1 density management thinning unit in Connectivity (11 acres), 2 hardwood conversion units in the GFMA (8 acres), 1 hardwood conversion unit in Connectivity (14 acres), and 1 brush conversion in the GFMA (6 acres); totaling 633 acres. This total includes 90 acres of density management thinning in Riparian Reserves and 3 acres of brush/hardwood conversion in Riparian Reserves.

All perennial, non fish-bearing streams retain the interim Riparian Reserve widths of 220 feet (one site potential tree height - Section P of the Analysis File) on each side of stream channels. All fish-bearing streams retain the interim Riparian Reserve widths of 440 feet on each side of stream channels. Intermittent streams retain the interim Riparian Reserve widths of 220 feet on each side of stream channels except in fourteen cases. Riparian Reserves on 14 intermittent stream segments were analyzed and the boundaries adjusted on one or both sides of the stream channel as follows: one segment adjusted to 175 feet, ten segments adjusted to 110 feet, one segment adjusted to 90 feet, and two adjusted to 110 feet or ridgetop (whichever is less). Approximately 22 acres of Riparian Reserve would be converted to GFMA through these modifications. Approximately two acres of GFMA would be converted to Riparian Reserve to encompass potentially unstable areas. In all cases, the adjustments would meet the Aquatic Conservation Strategy (ACS) Objectives (Section K of the Analysis File contains detailed ACS analysis). Details on Riparian Reserve adjustments are contained in Section O of the Analysis File.

Future stocking of regeneration harvest units would closely resemble the original stand species composition through planting and natural seeding.

Commercial thinnings (CT), density management thinnings (DMT) in Connectivity, and DMT in Riparian Reserves would retain 90-130 trees/acre in most units. In these cases, spacing would vary throughout the thinning units and hardwoods would be thinned along with conifer. Young forests in Riparian Reserves would be treated to facilitate development of large trees, snags, and down logs; hardwood stands in Riparian Reserves which resulted from past harvest/disturbance would be treated to reestablish conifers. Alternative DMT treatments would be applied to all or portions of Riparian Reserves in EA Units 26, 28, and 35 to facilitate development of structural and species diversity. Treatments include thinning with a widely variable spacing between 70-135 trees/acre or clearing circles around individual trees. These treatments would accelerate development of late-successional forest characteristics in Riparian Reserves and improve habitat conditions for riparian dependent/associated species.

Regeneration harvest units would retain approximately 7 wildlife trees/acre in the GFMA units and 13 wildlife trees/acre in the Connectivity units. Skyline cable systems would be used for harvest in all units except one hardwood conversion unit (6 acres) which would be ground based. Approximately 150 feet of new (semi-permanent) road construction would occur in a Riparian Reserve, but the road would not cross any stream channels and would be fully decommissioned after use.

This alternative could be accomplished through timber sales in FY99, FY2000, & FY2001. Appendix 2 contains detailed unit descriptions. Appendix 3 contains maps showing roads to be constructed, improved or renovated for this alternative.

Regen Harvest Acres (GFMA)	Regen Harvest Acres (Con.)	CT Harvest Acres	DMT Harvest Acres	Hardwd Conver. Acres (GFMA)	Hardwd Conver. Acres (Con.)	Brush Conver. Acres	Total Acres	Total Volume (MBF)
239	110	245	11	8	14	6	633	18,554

Regen - Regeneration

Con. - Connectivity

CT - Commercial Thinnings (Includes Density management thinning in Riparian Reserves)

DMT - Density management thinnings in Connectivity

Hardwd - Hardwood

Conver. - Conversion

MBF - Thousand Board Feet

N.C. - Rock Decom. (miles)	N.C. - Dirt Full Decom. (miles)	N.C. - Cementitious** Full Decom. (miles)	Road Improve. (Rock) Decommission (miles)	Road Renovation - Rock (miles)	Designated Skid Road Full Decom. (miles)	Road Miles To Be Closed*
1.1	.6	.3	.9	14.1	.2	10.62

N.C. - New Construction

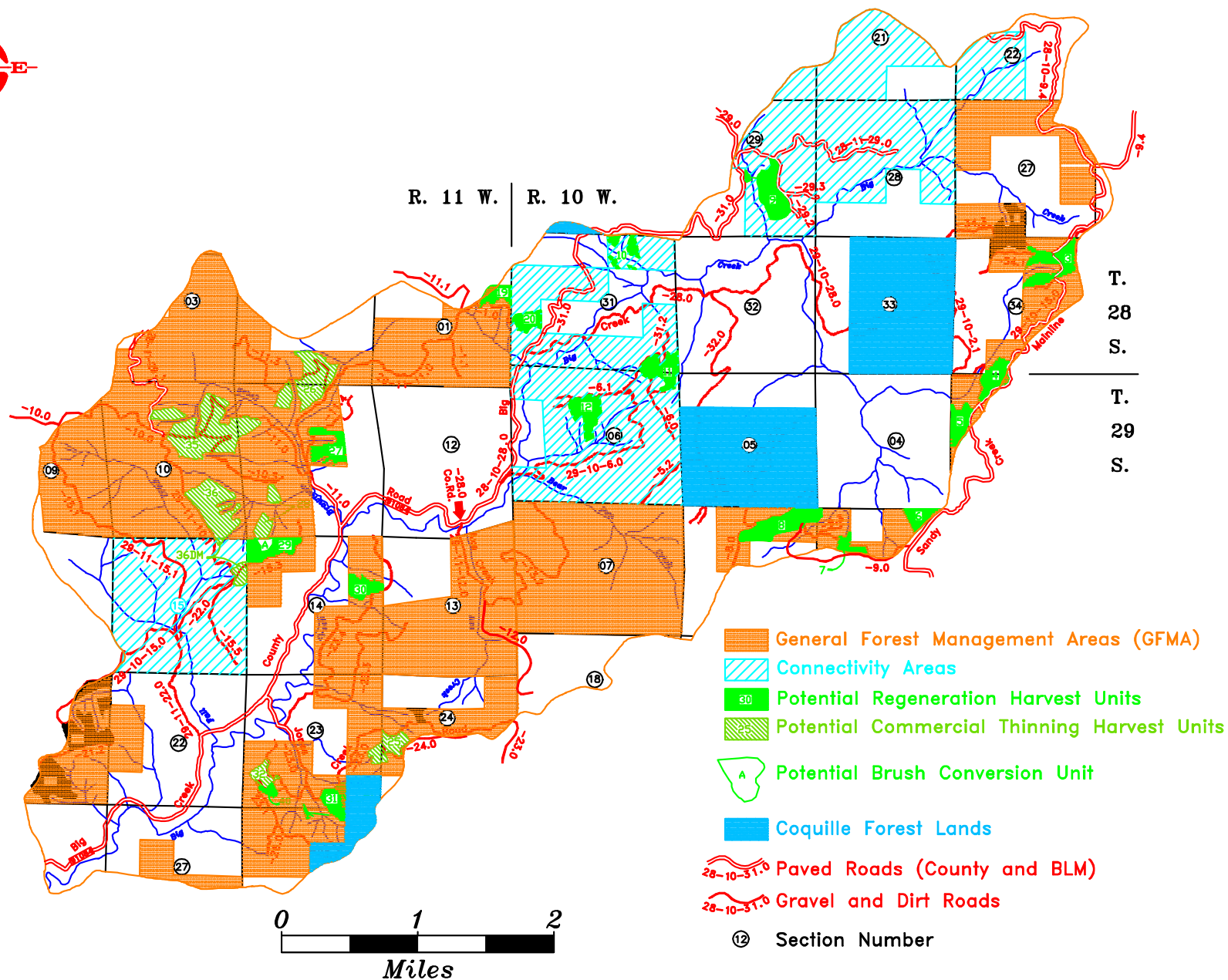
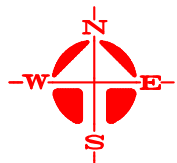
Decom. - Decommission; Roads to be blocked and treated as necessary to restore hydrologic functions after completion of timber sale contract.

Full Decom. - Full Decommission; Roads to be decommissioned, sub-soiled, and planted after completion of timber sale contract.

* - Roads closed under the Road Closure Recommendations, Appendix 4.

** Cement additive to existing soil to temporarily harden surface for timber haul.

Big Creek Analysis Area EA Alternative II – Proposed Action



Alternative III - Alternative Action

This alternative consists of 16 regeneration harvest units in the GFMA (361 acres), 4 regeneration harvest units in Connectivity (110 acres), 6 commercial thinning units in GFMA (245 acres), 1 density management thinning unit in Connectivity (11 acres), 2 hardwood conversion units in the GFMA (8 acres), 1 hardwood conversion unit in Connectivity (14 acres), and 1 brush conversion in the GFMA (6 acres); totaling 755 acres. This total includes 90 acres of density management thinning (DMT) in Riparian Reserve and 3 acres of brush/hardwood conversion in Riparian Reserve.

All perennial, non fish-bearing streams retain the interim Riparian Reserve widths of 220 feet (one site potential tree height - Section P of the Analysis File) on each side of stream channels. All fish-bearing streams retain the interim Riparian Reserve widths of 440 feet on each side of stream channels. Intermittent streams retain the interim Riparian Reserve widths of 220 feet on each side of stream channels except in seventeen cases. Riparian Reserves on 17 intermittent stream segments were analyzed and the boundaries adjusted on one or both sides of the stream channel as follows: one segment adjusted to 175 feet, thirteen segments adjusted to 110 feet, one segment adjusted to 90 feet, and two adjusted to 110 feet or ridgetop (whichever is less). Approximately 30 acres of Riparian Reserve would be converted to GFMA through these modifications. Approximately two acres of GFMA would be converted to Riparian Reserve to encompass potentially unstable areas. In all cases, the adjustments would meet the Aquatic Conservation Strategy (ACS) Objectives (Section K of the Analysis File contains detailed ACS analysis). Details on Riparian Reserve adjustments is contained in Section O of the Analysis File.

Future stocking of regeneration harvest units would closely resemble the original stand species composition through planting and natural seeding.

Commercial thinnings (CT) and DMT in Connectivity, and DMT in Riparian Reserves would retain 90-130 trees/acre in most units. In these cases, spacing would vary throughout the thinning units and hardwoods would be thinned along with conifer. Young forests in Riparian Reserves would be treated to facilitate development of large trees, snags, and down logs; hardwood stands in Riparian Reserves which resulted from past harvest/disturbance would be treated to reestablish conifers. Alternative DMT treatments would be applied to all or portions of Riparian Reserves in EA Units 26, 28, and 35 to facilitate development of structural and species diversity. Treatments would include thinning with a widely variable spacing between 70-135 trees/acre or clearing circles around individual trees. These treatments would accelerate development of late-successional forest characteristics in Riparian Reserves and improve habitat conditions for riparian dependent/associated species.

Regeneration harvest units would retain approximately 7 wildlife trees/acre in the GFMA units and 13 wildlife trees/acre in the Connectivity units. Skyline cable systems would be used for harvest in all units except one hardwood conversion unit (6 acres) which would be ground based. Approximately 150 feet of new road (semi-permanent) construction would occur in a Riparian Reserve but the road would not cross any stream channels and it would be fully decommissioned after use.

This alternative could be accomplished through timber sales in FY99, FY2000, & FY2001.

Appendix 2 contains detailed unit descriptions. Appendix 3 contains maps showing roads to be constructed, improved or renovated for this alternative.

Regen Harvest Acres (GFMA)	Regen Harvest Acres (Con.)	CT Harvest Acres	DMT Harvest Acres	Hardwd Conver. Acres (GFMA)	Hardwd Conver. Acres (Con.)	Brush Conver. Acres	Total Acres	Total Volume (MBF)
361	110	245	11	8	14	6	755	25,135

Regen - Regeneration

Con. - Connectivity

CT - Commercial Thinnings (includes density management thinnings in Riparian Reserves)

DMT - Density management thinnings in Connectivity

Hardwd - Hardwood

Conver. - Conversion

MBF - Thousand Board Feet

N.C. - Rock Decom. (miles)	N.C. - Dirt Full Decom. (miles)	N.C. - Cementitious** Full Decom. (miles)	Road Improve. (Rock) Decommission (miles)	Road Renovation - Rock (miles)	Designated Skid Road Full Decom. (miles)	Road Miles To Be Closed*
1.2	.7	.3	.9	16.9	.2	11.14

N.C. - New Construction

Decom. - Decommission; Roads to be blocked and treated as necessary to restore hydrologic functions after completion of timber sale contract.

Full Decom. - Full Decommission; Roads to be decommissioned, sub-soiled, and planted after completion of timber sale contract.

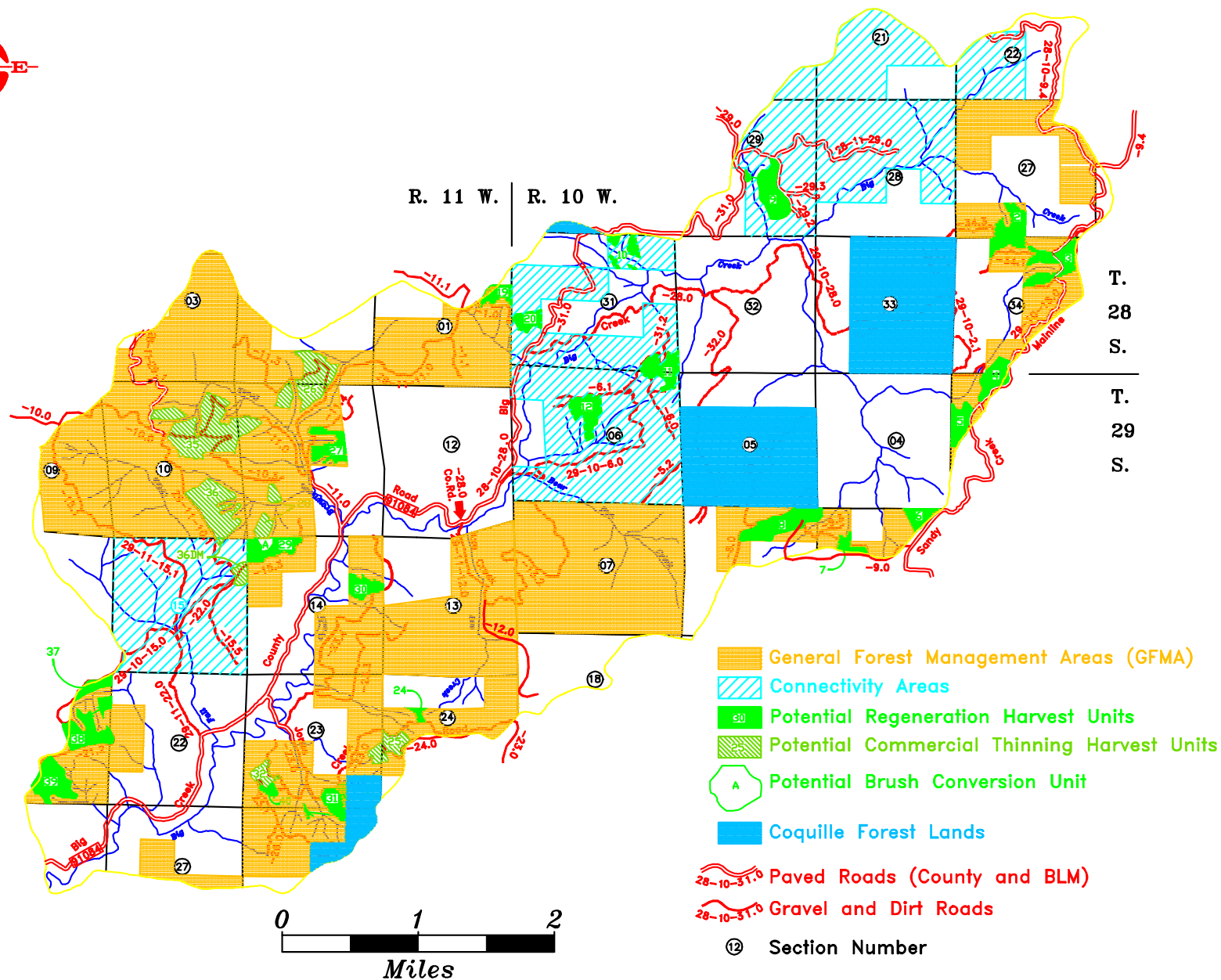
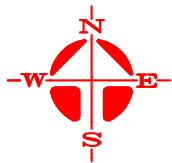
* - Roads closed under the Road Closure Recommendations, Appendix 4.

** Cement additive to existing soil to temporarily harden surface for timber haul.

Design Features for Action Alternatives and Monitoring

Design features and monitoring can be found in Appendix 1.

Big Creek Analysis Area EA Alternative III – Alternative Action



Summary of Consequences - Relative Impacts of Alternatives

Consequence	Alternative I No Action	Alternative II Proposed Action	Alternative III Alternative Action
Landscape Pattern (Issue 1)			
Late-successional forest removed (acres)	0	274	389
Incipient old-growth forest removed (acres)	0	0	28
Habitat removal from important connection areas (acres)	0	0	74
Contribute to the District's ASQ (Issue 2)			
Estimated timber volume (MBF)	0	18,554	25,135
Estimated timber volume from Connectivity (MBF)	0	4,321	4,321
Riparian Reserve Functions (Issue 3)			
Net Reduction of Riparian Reserve (Acres)	0	20	28
Potential future LWD recruitment	No change	Enhanced	Enhanced
Impacts to "high value" Riparian Reserves	None	Low	Medium
Roads (Issue 4)			
Open road density (Miles/Section) ²	4.04	3.29	3.25
Miles of new road corridor (potential barriers to wildlife movements)	0	2.0	2.4

III. AFFECTED ENVIRONMENT

VEGETATION: The Big Creek Analysis Area lies within the Port-Orford-cedar variant of the western hemlock zone (see Big Creek Watershed Analysis). Much of the area was affected by the 1868 fire which resulted in much of the forest vegetation having birthdates of 1860 -1890. The species composition reflects this combination. Timber sale data from previously harvested (100-120 year old) stands throughout the analysis area reveals that the percentage of Douglas-fir stems ranges from 60 to 75%, with a mixture of Port-Orford-cedar (< 31%), western hemlock (<15%), hardwoods (<15%), grand fir (<10%), and a trace (<1%) of western redcedar. Visual observations of these stands indicate that the understory is comprised of small hemlock, Port-Orford-cedar, myrtle, chinkapin, tanoak, and a variety of shrub species. Within the few patches of residual older forests, the percentage of hemlock and Port-Orford-cedar increase to approximately half the stand composition. Additional information on vegetation diversity can be found on pages 71 - 76 of the Big Creek Watershed Analysis.

Currently, 40% of the forest cover is in late-successional habitat (defined as forests > 80 years of age), with over half of that within some variation of 'Reserve' land use allocation. Additional information on stand ages can be found on pages 12, 13, 74, and 100 of the Big Creek Watershed Analysis.

WILDLIFE: The analysis area contains numerous ecologically and economically important wildlife species. Table C-1 Appendix C of the Big Creek Watershed Analysis contains a list of all vertebrate wildlife species known or suspected to occur. There are 31 wildlife species or species groups of special management concern. These 31 species/groups fall into two categories; some require further site-specific analysis under the regional planning efforts (Northwest Forest Plan); the others are of special local concern. These species of concern rely on the pattern and distribution of key habitats or habitat features such as complex forest structure, late-successional forests, snags and down logs, and rocky habitats.

SOILS/GEOLOGY: The proposed units within the Big Creek Analysis Area are composed of soil types that fall into one of three classifications: The Digger - Preacher - Remote, Preacher - Blachly, or Preacher - Bohannon associations. These soil types are described in detail in the Coos County soil survey of 1989. The Digger - Preacher - Remote soils are shallow to moderately deep, steep to very steep slopes, gravelly and loamy soils derived from sedimentary rock. The Preacher - Bohannon soils are deep to moderately deep, have gentle to moderately steep slopes, and gravelly and loamy soils that formed from sedimentary rock. The Preacher - Blachly soils exhibit deep well drained characteristics on gentle to moderately steep slopes, are clayey in nature and are derived from arkosic sandstone or basalt or sedimentary rock.

Of these soil types the 14F, 15F, 46F, and 58F are the most sensitive to landslides as noted in the Big Creek Watershed Analysis. The erosion hazard is high when bare soil is exposed to rain on steep and very steep slopes. Erosion is moderate when slopes are less than 50%.

The Big Creek Analysis Area has four major fault lines running on a NE to SW direction.

Three fault lines are closer to the Sandy Creek subwatershed, and the other fault line cuts across the upper portions of the Fall and Brownson Creek drainages. For the majority of the units proposed for harvest, fault lines are not a factor. However, some units have elevational changes in the middle of the unit resulting in steep cliffs that could impair yarding by reducing deflection. These are due to uplifts within the formation rather than between faults. EA Units 8, 12, and 35 are impacted by faults and EA Unit 25 is straddled across two different formations.

GEOMORPHOLOGY/HYDROLOGY/WATER QUALITY: Big Creek is a 16,661-acre 6th field subwatershed, within the Middle Fork Coquille watershed. Big Creek is a gentle gradient (0.5%), 5th order stream for most of its length, with steep tributaries including Big, Brownson, Fall, Bear Pen, Axe and Jones Creeks. The subwatershed has about 186 miles of stream channels and a drainage density approaching 7.2 mi/mi². Intermittent 1st and 2nd order streams, seeps, or springs, and perennial 1st and higher-order streams are present throughout the Big Creek Analysis Area. Most of the subwatershed is low elevation and below the transient snow zone, except for small portions of upper Big Creek. About 60% of the annual runoff occurs between December and February. Streams are flashy and very responsive to storms with hydrographs showing sharp rises and steep drops. High flows occur <5% of the time, moderate flows 45% of the time, and low flows 50% of the time.

Water quality in Big Creek is affected by watershed processes and land use practices. The primary source of sediment delivery to channels is debris avalanches and shallow rapid debris flows into source streams. This process occurs on an infrequent basis, but yields high sediment delivery volumes. There are many in-channel sources of sediment in lower Big Creek, especially from Rosgen stream types A5, A6, B6, F5 and F6. Watershed analysis showed there were higher turbidities in the Jones Creek drainage during storms, due to the parent material of the area.

Many 1st and 2nd order channels are either entrenched or heavily embedded with fine sediment (silt and sand). High turbidities from fine sediment delivery are regularly noted during spawning surveys. While certain soils within the analysis area are naturally predisposed to produce fine sediment suspensions during high runoff periods, impacts from past land-management practices have undoubtedly exacerbated the process, with respect to both in-channel and out-of-channel sources. These conditions are likely to exist throughout the private and public land area that was tractor logged before 1980.

Big Creek exceeds the South Coast Basin Standard for summer water temperature from the mouth to Bear Pen Creek, and is listed in the DEQ's 305(d) report.

There are 22 occupied residences in the analysis area, consuming water for domestic and irrigation purposes from surface, spring or groundwater sources. Two water rights on record, permit numbers 34907 and 48468, have spring-fed points of diversion on BLM within Sec. 21, T. 29 S., R11 W., WM. These permit holders use spring water for domestic use and have existing Right-of-Way Agreements with BLM. The points of diversion and transmission lines appear to be within Riparian Reserves.

FISHERIES: The Big Creek watershed supports populations of coho salmon, fall chinook salmon, winter steelhead, coastal cutthroat trout (resident and sea-run), Pacific lamprey, brook lamprey, speckled dace, prickly sculpin, reticulate sculpin, threespine stickleback, and largescale sucker. Oregon Coast coho salmon are listed as threatened under the Endangered Species Act (ESA). Furthermore, Oregon Coast steelhead and coastal sea-run cutthroat trout are federal candidate species; stock status reviews are ongoing to determine if future listings may be warranted. The distribution of resident and anadromous fish within the analysis area is described in the Big Creek Watershed Analysis (p.114); further revisions to fish distribution, based on electroshocking in spring of 1997 and 1998, are on file in the Myrtlewood Resource Area (Section O of the Analysis File). Additional information on fish stocks can be found on pages 16, 114-117 and 126-133 of the Big Creek Watershed Analysis.

RIPARIAN RESERVES: The Big Creek Analysis Area contains about 5,037 acres of interim Riparian Reserve on BLM-managed lands. Age class distribution is as follows: 0-40 yrs (48%), 41-80 yrs (12%), 81-120 yrs (13%), 121-160 yrs (24%), 161-20 yrs (trace), and 200+ yrs (2%). While the majority of these Riparian Reserves contain low to moderate amounts of soft, embedded, down logs from previous harvest (decay class 3+), "hard" (class 1 and 2) down logs are virtually absent. Only 2% of Riparian Reserve stands are greater than 160 years old; it is at this age that trees reach a size that they contribute appreciably to large wood quantities. Over the next forty years, riparian stands currently 120-160 years old (24% of Riparian Reserve) will "self-thin" and begin to provide class 1 logs to riparian forests and streams. However, because the great majority of stands are <40 years old, it would take up to 120 years to reach optimal wood recruitment levels in Riparian Reserves. Additional information on the condition of Riparian Reserves can be found in the Big Creek Watershed Analysis (pp. 82-86) and Riparian Reserve Evaluation (pp. 146-160).

TRANSPORTATION SYSTEM: At present, the open road density on BLM-managed lands within the analysis area is approximately 4.0 mi/mi². The road systems access both federal and private lands, consequently the Bureau have existing Reciprocal Right-Of-Way Agreements with Georgia Pacific-West, Menasha Corporation, Al Pierce Lumber Company, and Lone Rock Timber Company. These Reciprocal Right-Of-Way Agreements give all land owners access to their lands, and at the same time, reduce road density by eliminating the need for duplicate road systems. In addition, lands managed by the Coquille Tribe use the road system to access their lands.

The BLM controls approximately 65% (70 miles) of the transportation system (108 miles total) in the analysis area. Approximately 86% (60 miles) of the BLM-controlled roads are either gravel or bituminous surfaced. Many of the unsurfaced roads in the analysis area fall into two categories: either newly constructed roads or old roads in some stage of hydrologic recovery. Most older dirt spurs and roads on BLM-managed lands are not contributing sediment to stream channels from their surfaces.

IV. ENVIRONMENTAL CONSEQUENCES

Alternative I - No Action

Under this alternative, no timber harvest, road decommissioning, or mitigation would take place within the analysis area at this time.

Direct and Indirect Effects (Alt. I)

Landscape Pattern (Issue 1)

Key Indicator: Late-successional forest characteristics

Alternative I maintains the most existing late-successional and old-growth habitat, but foregoes opportunities to facilitate future development of late-successional forest characteristics in younger stands and hardwood/brush stands.

No late-successional forests or forests with late-successional forest characteristics (large diameter trees, broken and decayed trees, large down logs and snags) would be harvested. Approximately 40% of BLM-managed lands in the analysis area contain stands >80 years of age and 25% contain forests >120 years of age. Approximately 60% of these late-successional forests are in Reserves. Old-growth forests (those >200 years of age) occur on <2% of the analysis area (Table W-1, Section I of the Analysis File). Late-successional forests in the analysis area along the Middle Fork Coquille River corridor would remain intact; these forests are important potential habitat for bald eagles and some other river-oriented species. Dense conifer stands, with little diversity in plant species or structure, would continue to develop diversity slowly. Brush fields and hardwood stands resulting from past management would continue to develop slowly toward later-successional stages.

The analysis area contains all or portions of 3 Connectivity Blocks (see Big Creek WA for maps of Connectivity Blocks). Blocks 1 and 2 contain 59% and 44% of late-successional forests, respectively; most of these are 81-120 years of age. See Table W-2 (Section I of the Analysis File) for a further breakdown of age classes in Connectivity Areas.

Key Indicator: Habitat Connections

All existing connections on BLM-managed lands would remain intact including the three important connection areas in the north and west parts of the analysis area that were identified in the Big Creek Watershed Analysis (p. 96).

Contribute to the District's Allowable Sale Quantity (ASQ)(Issue 2)

This alternative would not contribute any volume toward the decadal ASQ for the District. Based on the FRMP, there is planned regeneration harvest in GFMA and Connectivity, commercial thinning in GFMA, and density management thinning in Connectivity. All of these treatments contribute to the District's ASQ. Opportunities to manage Connectivity, convert

brush and hardwood stands to conifer, or commercial thin in the GFMA would be delayed or foregone.

Riparian Reserve Function (Issue 3)

All Riparian Reserves associated with proposed regeneration harvest units would remain at interim reserve widths. The No-Action Alternative would not affect the development of the 160 year-old age class in the Riparian Reserves. DMT would not occur within Riparian Reserves, therefore we forego the opportunity to enhance the structural characteristics (including future LWD) in these stands. Habitat conditions for species associated with or dependant upon Riparian Reserves would remain unchanged.

Roads (Issue 4)

Key Indicator: Open road density

The following table summarizes the effects of roads for all alternatives:

Table 1: Road Density

	Alt. I	Alt. II	Alt. III
Miles of new road construction ¹	0	2.0	2.4
Open Road Density on BLM (miles/sq. mile) ²	4.04	3.29	3.25

¹ All new road construction would be fully decommissioned or decommissioned; includes designated skid road.

² Open roads = roads accessible to motorized vehicles. Target open road density in the FRMP is 1.1 miles/sq. mile with a maximum of 2.9 miles/sq. mile.

There are no direct or indirect effects to open road density under the No-Action Alternative.

Key Indicator: Impacts to wildlife

The existing open road density within the analysis area would perpetuate the current level of disturbance to wildlife, discouraging the use of habitats adjacent to these open roads. No new roads would be constructed; therefore, no new barriers (corridors or graveled surfaces) to movement would be created. Since open road density on BLM would remain the same, the potential for loss of roadside down log habitat through theft and salvage would not change. The overall effect of the No-Action Alternative would be continued disturbance to wildlife and adverse impacts to wildlife habitat at the current high level. None of the recommended road decommissioning proposed under the action alternatives would be completed at this time. Barrier effects of roads on wildlife movements will remain unchanged. Decreased connectivity of habitats due to road barriers limit the ability of wildlife to recolonize habitats and isolates populations making them more susceptible to local extirpation.

Cumulative Effects (Alt. I)

Landscape Pattern (Issue 1)

Key Indicator: Late-successional forest characteristics

There are no late-successional forests on private lands, and none are expected to develop because of short rotation ages. Approximately 20 acres of hardwood forests in Riparian Reserves will be treated to reestablish conifers through Jobs-In-the-Woods (JIW) riparian restoration projects (EA No. OR120-98-12), which will facilitate development of future late-successional forest characteristics. The Coquille Indian Tribe is expected to harvest approximately 334 acres in the analysis area within the next few years, most of which is late-successional forest. The largest, most contiguous blocks of late-successional habitat and key late-successional habitat near the Coquille River would not be affected by Coquille Indian Tribe harvest. The overall percentage of late-successional forest in the analysis area would be expected to increase by >1,000 acres over the next 4 decades as new stands enter the 80+ year age class.

Key Indicator: Habitat Connections

Currently active timber sales (Sandy Creek Analysis Area EA, No. OR128-96-21) will harvest approximately 273 acres of late-successional forest adjacent to the northeast part of the Big Creek Analysis Area. With Alternative I, no additional late-successional forests would be harvested; therefore, there would be no additional cumulative effects to habitat connections. Mature and older forest connections between mainstem Big Creek and the surrounding uplands would continue to be weak as private land is harvested.

Contribute to the District's Allowable Sale Quantity (ASQ)(Issue 2)

Delayed harvest may result in lost opportunities for commercial and density management thinning in some stands. Growth in some of these stands would be reduced due to competition, resulting in decreased long-term volume and value. Delaying hardwood and brush conversions would result in lost opportunities for stands to be reestablished with conifer, again resulting in decreased long-term volume. Not harvesting within this analysis area would shift the burden of meeting the District's ASQ commitment to other watersheds, resulting in greater cumulative effects to those areas.

Riparian Reserve Functions (Issue 3)

Key Indicator: LWD recruitment potential

Past harvest and stream cleaning activities have depleted large woody material and reduced recruitment of large logs to streams and riparian areas. Recruitment is expected to increase as stands age. In addition, riparian restoration projects to be completed through Jobs-In-the-Woods (EA OR120-98-12) would enhance LWD recruitment potential in portions of this

analysis area. The No-Action Alternative would not add to cumulative effects of large wood depletion in the Big Creek watershed, nor would it accelerate tree growth and enhance potential future large wood accumulations in Riparian Reserves that are currently <50 years old.

Key Indicator: Riparian dependent/associated species

Riparian restoration projects to be completed through Jobs-In-the-Woods (EA OR120-98-12) would enhance late-successional forest characteristics, including snag development and LWD recruitment potential in Riparian Reserves. JIW projects will include treating about 20 acres of hardwood stands to reestablish conifers and creating snags within approximately 100 acres of Riparian Reserves (1-2 snags/acre). These projects will benefit riparian dependent/associated species. Harvest on Coquille Indian Tribe lands would be consistent with BLM harvest guidelines including the ACS. The availability of late-successional forest in Riparian Reserves is expected to remain fairly steady for 2 decades then increase gradually until all Riparian Reserve stands are in the 80+ year age class. Habitats on private lands receive only limited protection, which restricts habitat connectivity, especially along mainstem Big Creek.

Roads (Issue 4)

Key Indicator: Open road density

Road density on BLM-managed lands would remain the same. However, total road density is likely to increase as private landowners build or reopen (and leave open) roads to harvest private lands.

Key Indicator: Impacts to wildlife

Road density on private lands may increase as new roads are constructed or old roads are reopened to facilitate harvest. An unknown amount of existing roads may be closed or decommissioned on BLM through future restoration projects. Barriers to wildlife movements due to roads will likely remain steady or increase slightly if overall road density increases due to activities on private land.

Alternative II - Proposed Action

Direct and Indirect Effects (Alt. II)

Landscape Pattern (Issue 1)

Key Indicator: Late-successional forest characteristics

Alternative II removes some late-successional forest, but does not affect any incipient old-growth habitat. It does not remove any late-successional forest from the Middle Fork Coquille

River corridor. It also captures some opportunities to facilitate development of late-successional forest characteristics in young and hardwood/brush stands.

This alternative would harvest 274 acres (7.5%) of late-successional forests in the analysis area (171 on GFMA, 103 on Connectivity), none of which are incipient old-growth forest. Approximately 9 acres (net) of late-successional forests would be permanently removed from Reserves through changes in Riparian Reserve boundaries. No late-successional forest would be removed from the Coquille River corridor, which is important to maintain future nesting options for bald eagles and other species associated with rivers and late-successional forests. After harvest, approximately 37% of BLM-managed lands in the analysis area would contain stands >80 years of age, and 24% would contain forests >120 years of age. The percentage of old-growth forests in the analysis area would stay the same (Table W-1, Section I in the Analysis File).

After harvest, Connectivity Blocks 1 and 2 would contain 58% and 38% of forests >80 years of age, respectively. Harvest units would remove 31 acres of late-successional forest from Block 1 and 65 acres from Block 2. Harvest units would affect the most common late-successional forest age class; therefore, they do not further unbalance forest age class distribution in Connectivity Areas. Further breakdown of age classes in Connectivity Areas is contained in Table W-2 in Section I of the Analysis File. The FRMP states that each Connectivity Block should contain 25-30% late-successional forest; this alternative meets this requirement.

With a minimum harvest age of 60 years in the GFMA, late-successional forest characteristics would not likely develop again once a stand is harvested. The 150-year area control rotation on Connectivity areas should allow some late-successional forest characteristics to develop before the stands are harvested again.

Changing Riparian Reserve boundaries would result in the net loss of approximately 20 acres of Reserves. The areas removed from Reserves would probably never reach late-successional conditions under current rotation ages. Approximately 90 acres of young forests in Riparian Reserves would be treated to facilitate development of large trees, snags, and down logs; hardwood stands in Riparian Reserves, which resulted from past harvest/disturbance, would be treated to reestablish conifers. These treated stands in Riparian Reserves should develop late-successional characteristics earlier.

Key Indicator: Habitat Connections

Alternative II retains connections in 3 important areas identified in the Big Creek Watershed Analysis (p. 96), and captures some opportunities to facilitate long-term reestablishment of connections currently broken by young and hardwood/brush stands. However, some late-successional forest connections between uplands and riparian areas would be broken or constricted as a result of harvest.

Existing connections would slowly improve as young and mature stands develop, as the contrast between edges decreases, and as canopy gaps close. Conifer forest connections currently broken by brush/hardwood stands would reconnect as these stands are restored to conifers. Connections along Riparian Reserves on BLM-managed land would improve in the

future (20+ years) as a result of the Riparian Reserve treatments in young conifer stands and reestablishment of conifer in brush/hardwood stands. Connections broken by regeneration harvest units from this EA would begin to re-form as the canopy closes and matures 20 or more years in the future.

Contribute to the District's Allowable Sale Quantity (ASQ)(Issue 2)

This alternative would provide an estimated timber volume of 18,554 MBF, of which approximately 17,791 MBF would contribute to the District's decadal ASQ commitment (an estimated volume of 763 MBF is from density management in Riparian Reserves, which does not count towards the ASQ). Approximately 4,321 MBF (of the total 18,554 MBF) would contribute to the volume for the District that is expected to come from Connectivity. Approximately 245 acres (of the 633 total acres treated) would be commercially thinned and approximately 11 acres (of the total acres treated) would be density management thinned in the Connectivity. These treatment acres would provide additional harvest options in the future that would not be available if thinning of these stands was deferred. Approximately 22 acres (of the total acres treated) would be hardwood conversion and approximately 6 acres (of the total acres treated) would be brush conversion. These treatment acres would reestablish conifer for future management options.

Riparian Reserve Functions (Issue 3)

The modified Riparian Reserve network and treatments in Riparian Reserves were designed to adequately protect aquatic resources and meet the ACS objectives (detailed information is contained in Section K of the Analysis File).

Key Indicator: Large wood recruitment potential

Density management and hardwood/brushfield conversions in Riparian Reserves are expected to enhance future recruitment of LWD over the long term. Riparian Reserve width reductions would not reduce potential for LWD recruitment over the long term.

Under Alternative II, about 90 acres (<2 %) of the Riparian Reserves in the Big Creek Analysis Area are proposed for density management thinning. Treatments in Riparian Reserves would generally be the same as the associated commercial thinnings in the uplands, and would enhance the future recruitment of LWD.

Due to the small diameter and high decay rate of woody material recruited from stands <40 years old, the wood provides little in terms of in-stream structure and channel stability. While small diameter logs contribute to organic matter important in food webs, density management thinning in Riparian Reserves is not likely to impact functions associated with down wood in the short term. In the long term (15+ yrs), the growth rate of individual trees and the resultant structural diversity is expected to increase in the thinned Riparian Reserves. This would benefit aquatic habitat and channel stability, because larger pieces of woody structure would be available in a shorter period of time than would occur without thinning.

All Riparian Reserves proposed for reductions are on Rosgen Type-A channels. They are intermittent or seasonally flowing, moderate in gradient (4-20%), and receive the vast majority of wood from local stream-side sources (e.g., windfall, landslides). Of the material delivered to these streams, 95% originates from within 110 feet of the stream bank (see Section J of the Analysis File). Furthermore, wood recruitment over a ridge is highly improbable. Thus, the proposed Riparian Reserve boundary adjustments on fourteen stream segments would not appreciably decrease the large wood recruitment potential.

Under Alternative II, three acres within Riparian Reserves are proposed for hardwood/brushfield conversion. The reestablishment of conifer would improve riparian habitat and channel stability, because larger pieces of woody structure would be available in a shorter period of time than would occur without treatment.

The 150 feet of road construction (EA Unit 31) and 400 feet of designated skid road in Riparian Reserve (EA Unit 41) would not affect LWD recruitment. The few conifer trees removed for the road construction have virtually no chance of reaching the stream channel, because construction is in the outer portion of the Reserve and an existing road already interrupts delivery potential. Trees removed for the designated skid road (which is in a hardwood conversion area) are hardwoods [alder] and would not contribute LWD to the stream.

Key Indicator: Riparian dependent/associated species

Riparian Reserve reductions under Alternative II would have minimal impacts to Riparian dependent/associated species.

This alternative would result in a 20 acre (net) decrease in Riparian Reserves, 9 of which are currently late-successional forests. No important habitat microsites (rocks, small wet areas, concentrations of down logs or snags) would be exposed or threatened by the Riparian Reserve reductions. Most adjusted Riparian Reserves would be at least 110 feet wide on each side to accommodate home ranges of relatively immobile wildlife species.

Riparian Reserve reductions are scattered across the landscape, so they are unlikely to compromise function for upland species, whose conservation is dependent on the Riparian Reserve network. The net reduction of 20 acres of Riparian Reserves represents 0.4% of the estimated Riparian Reserve acres in the analysis area.

Young forests in Riparian Reserves would be treated to facilitate development of large trees, snags, and down logs; hardwood stands in Riparian Reserves, which resulted from past harvest/disturbance, would be treated to reestablish conifers. Special DMT treatments would be applied to all or portions of Riparian Reserves in EA Units 26, 28, and 35 to facilitate development of structural and species diversity. Treatments would include thinning with a widely variable spacing between 70-135 trees/acre or clearing circles around individual trees. These treatments in Riparian Reserves would accelerate development of late-successional forest characteristics and improve habitat conditions for riparian dependent/associated species.

Watershed analysis cautioned against reducing Riparian Reserves in identified “high value” areas. This alternative includes reductions in two potentially “high value” areas (i.e. forest >120 years of age and Riparian Reserves in Brownson Creek drainage). EA Unit 11 contains Riparian Reserves with forests >120 years of age. The design for this unit includes reducing a Riparian Reserve on one intermittent stream segment by 1 acre; however, 2 acres of forest >120 years old would be added to Riparian Reserves. Therefore, there would be an overall benefit, because there would be a net increase of 1 acre in this age-class in Riparian Reserves.

Riparian Reserves in Brownson Creek drainage were identified in watershed analysis as having “high value” due to the high proportion of late-successional forest, and potential to provide connections and continuity between drainages. EA Unit 27 is located in Brownson Creek drainage and would include reductions of approximately 7 acres of Riparian Reserves. A closer inspection of Riparian Reserves in this unit revealed that they were not of “high value” because they do not provide connections or continuity of habitat (see Wildlife Report, Section I for details).

The 150 feet of road construction and 400 feet of designated skid road in Riparian Reserve would be fully decommissioned after harvest. These actions would have an adverse short-term effect of possibly creating a partial barrier to movements for some small wildlife species. There would be a positive long-term effect, because a hardwood stand in Riparian Reserve would be restored to conifers.

Roads (Issue 4)

Key Indicator: Open road density

The new construction would result in a short-term increase in open road density. However, the net result of all road work proposed in this alternative is a reduction in open road density on BLM-managed land from 4.04 to 3.29 mi/mi² in the analysis area (see Table 1). This would move the road density toward the target of 1.1 mi/mi².

Key Indicator: Impacts to wildlife

Overall, this alternative would provide a net benefit to wildlife, because of the amount of road decommissioning.

Alternative II would create 2.0 miles of new road corridors, of which 0.9 miles would be fully decommissioned and revegetated. Even though closed, the remaining 1.1 miles of decommissioned (but not revegetated) new road construction could continue to present partial barriers to species such as small mammals until the road surface revegetates and covers over with forest litter (perhaps 15-25 years). By breaking or weakening connections between habitats, these barriers limit the ability of certain wildlife to recolonize habitats and isolate populations making them more susceptible to local extirpation. Approximately 10.6 miles of existing roads would be decommissioned or closed, and open road density would fall to 3.29 mi/mi². The proposed reduction in open road density would result in less disturbance to wildlife, and should allow increased utilization of available habitat. A reduction in open road

density could also decrease the amount of roadside down-log habitat removed through theft and roadside salvage. Aquatic species such as amphibians are not expected to be impacted by road-related sedimentation (Section B of the Analysis File - Sediment Delivery).

New road corridors may take 20 years or more to reestablish trees that would close the canopy gap. However, most new road construction occurs within unit boundaries or in adjacent recent plantations. Only 200' of new road construction occurs through forest outside proposed unit boundaries (a young stand on adjacent private land); therefore, roads would not break forest corridors beyond the extent created by the proposed regeneration harvest units. In general, road decommissioning and the decrease in open road density (compared to Alternative I) would reduce harassment to wildlife. Barrier effects of existing roads would decrease in the long-term as decommissioned roads revegetate.

Cumulative Effects (Alt. II)

Landscape Pattern (Issue 1)

Key Indicator: Late-successional forest characteristics

Alternative II would result in a net loss of late-successional forests from the analysis area in the short and long term. No late-successional forests remain on private lands, and none are expected to develop because of short rotation ages. The harvest of 274 acres of late-successional habitat in this alternative would be partially offset in the long term by the 110 acres of young forest and hardwood/brush forest in Riparian Reserves which would be treated to facilitate development of future late-successional forest characteristics (20 acres of riparian restoration projects from Jobs-In-the-Woods, EA No. OR120-98-12, and 90 acres of DMT from this alternative). The Coquille Indian Tribe is expected to harvest approximately 334 acres in the subwatershed within the next few years, most of which is late-successional forest. The largest, most contiguous blocks of late-successional habitat and key late-successional habitat near the Coquille River would not be affected by Coquille Indian Tribe harvest. The overall percentage of late-successional forest in the analysis area would be expected to slightly decrease over the next 2-3 decades as the influx of new 80+ year old stands nearly offsets the loss due to harvest. After 3 decades, the overall percentage of late-successional stands would likely increase as many Reserve stands begin to enter the 80+ year age class (Big Creek WA).

Key Indicator: Habitat Connections

The Sandy Creek Analysis Area EA (No. OR128-96-21) included an assessment to harvest approximately 273 acres of late-successional forest adjacent to the northeast part of the Big Creek analysis area. With Alternative II, an additional 152 acres of late-successional forest would be harvested from this area; together these two actions remove 425 acres of late-successional forest from northeast Big Creek/northwest Sandy Creek. When other older harvests units are included, the result is nearly 2 mi² in early-successional stands less than 15 years of age along the shared boundary. This area, however, was identified in both the Sandy-Remote and the Big Creek Watershed Analysis as an area to concentrate harvest units in order to protect other areas of greater concern, such as interior habitats and late-successional forests adjacent to small LSRs.

Mature and older forest connections between mainstem Big Creek and the surrounding uplands would continue to be weak as private land is harvested.

Contribute to the District's Allowable Sale Quantity (ASQ)(Issue 2)

Alternative II provides approximately 5.5% of the decadal ASQ commitment for the District. The 4,321 MBF (of the total 18,554 MBF) provides approximately 33% of the expected Connectivity ASQ volume for this decade (see Tables E-1 & E-2, page E-9 of FRMP-ROD).

Riparian Reserve Functions (Issue 3)

Key Indicator: Large wood recruitment potential

Past harvest and stream cleaning activities have depleted large woody material and reduced the large wood recruitment potential on approximately half of the Riparian Reserve acreage. The proposed Riparian Reserve reductions amount to 22 acres (0.4 %) of Riparian Reserve in the analysis area, but is expected maintain large wood recruitment to the affected streams, as discussed above. As illustrated in the Big Creek Riparian Reserve Evaluation (Figure C-4), the proportion of the Riparian Reserve with stands 160+ years of age is expected to increase from 2.2% at present to approximately 39% over the next 70 years. This maturation of Riparian Reserves is expected to enhance future LWD recruitment over time. Density management treatments in the Riparian Reserves and the riparian restoration projects to be completed through Jobs-In-the-Woods are designed to further enhance LWD recruitment to streams on BLM-managed lands in the long term.

Key Indicator: Riparian dependent/associated species

Snags, a critical late-successional forest characteristic, will be created within approximately 100 acres of Riparian Reserves through a JIW project (1-2 snags/acre). Approximately 20 acres of hardwood forests in Riparian Reserves would also be treated to reestablish conifers under JIW. These actions, along with density management treatments in Riparian Reserves, would result in an overall long-term benefit to riparian dependent/associated species on BLM-managed lands, because development of late-successional habitat would be accelerated. Harvest units on Coquille Indian Tribe lands would retain Riparian Reserves consistent with the ACS. The availability of late-successional forest in Riparian Reserves is expected to remain fairly steady for 2 decades then increase gradually until all Riparian Reserve stands are in the 80+ year age class. Private lands offer less protection along streams than federal or Tribal lands; this limits the value of riparian habitats on private lands (especially along lower Big Creek) and interrupts connectivity of higher-quality riparian habitat on BLM and Tribal land.

Roads (Issue 4)

Key Indicator: Open road density

There would be a net decrease in the road density within the analysis area on BLM-administered lands. Additional road closures and road improvements are expected to occur

through other management activities, such as Job-in-the-Woods. The combined activities further contribute to attaining the target road density. Future timber harvest on BLM-administered lands in the analysis area may offer opportunities to close additional roads, further decreasing road density on public lands. However, overall open road densities in the analysis area may not improve, because of management activities on private lands.

Key Indicator: Impacts to wildlife

Road density on private lands may increase as new roads are constructed or old roads are reopened to facilitate harvest. Cumulatively, this alternative would provide benefits to wildlife above Alternative I, because there would be a net decrease in the overall number of roads in the analysis area.

Alternative III - Alternative Action

Direct and Indirect Effects (Alt. III)

Landscape Pattern (Issue 1)

Key Indicator: Late-successional forest characteristics

Alternative III would harvest substantially more late-successional forest than Alternative II, including some incipient old-growth forest. Some of this late-successional forest would be removed from the important Middle Fork Coquille River corridor. This alternative does capture some opportunities to facilitate development of late-successional forest characteristics in young and hardwood/brush stands.

This alternative would harvest 389 acres (11%) of late-successional forest in the analysis area, including 28 acres of incipient old-growth forest and 74 acres of late-successional forest along the critical Middle Fork Coquille River corridor. Approximately 15 acres (net) of late-successional forest would be permanently removed from Riparian Reserves through changes to Riparian Reserve boundaries. Post harvest, approximately 36% of BLM-managed lands in the analysis area would contain stands >80 years of age and 24% would contain forests >120 years of age. The percentage of old-growth forests in the analysis area would change by < 1% (detailed information in Table W-1, Section I of the Analysis File).

The effects to Connectivity Blocks in the analysis area would be the same as Alternative II.

Changing Riparian Reserve boundaries would result in the net loss of approximately 28 acres of Reserves as compared to 20 acres in Alternative II. Otherwise, the potential for the analysis area to provide long-term late-successional forest would be similar to Alternative II.

Key Indicator: Habitat Connections

Alternative III removes late-successional forest from 1 of 3 important connection areas and captures some opportunities to facilitate long-term reestablishment of connections currently broken by young and hardwood/brush stands.

Some connections between uplands and riparian areas would be broken or constricted as a result of harvest. Two of the 3 existing important connecting areas identified in the Big Creek Watershed Analysis (p. 96) would be maintained; one would be weakened in the Anderson Mountain area where 74 acres (3 regeneration harvest units) would be removed.

Existing connections would slowly improve as young and mature stands develop, as the contrast between edges decreases, and as canopy gaps close. Conifer forest connections currently broken by brush/hardwood stands would reconnect as these stands are restored to conifers. Connections along Riparian Reserves on BLM-managed land would improve in the future (20+ years) as a result of the Riparian Reserve treatments in young conifer stands and reestablishment of conifer in brush/hardwood stands. Connections broken by regeneration harvest units from this EA would begin to re-form as the canopy closes and matures 20 or more years in the future.

Contribute to the District's Allowable Sale Quantity (ASQ)(Issue 2)

This alternative would provide an estimated timber volume of 25,135 MBF, of which approximately 24,372 MBF would contribute to the District's decadal ASQ commitment (an estimated volume of 763 MBF is from density management in Riparian Reserves, which does not count towards the ASQ). Approximately 4,321 MBF (of the total 25,135 MBF) would contribute to the volume for the District that is expected to come from Connectivity. Approximately 245 acres (of the 755 total acres treated) would be commercially thinned and approximately 11 acres (of the total acres treated) would be density management thinned in the Connectivity. These treatment acres would provide additional harvest options in the future that would not be available if thinning of these stands was deferred. Approximately 22 acres (of the total acres treated) would be hardwood conversion and approximately 6 acres (of the total acres treated) would be brush conversion. These treatment acres would reestablish conifer for future management options.

Riparian Reserve Functions (Issue 3)

The modified Riparian Reserve network and treatments in Riparian Reserves were designed to adequately protect aquatic resources and meet the ACS objectives (detailed information is contained in Section K of the Analysis File).

Key Indicator: LWD recruitment potential

This alternative would reduce Riparian Reserves by 30 acres on seventeen stream segments as compared to 22 acres on fourteen stream segments in Alternative II. Total acres of density management treatment in Riparian Reserves would be the same as Alternative II. The direct and indirect impacts to large wood recruitment potential would be the same as in Alternative II.

Key Indicator: Riparian dependent/associated species

Overall impacts to riparian dependent/associated species would be higher than Alternative II.

This alternative would reduce Riparian Reserves by 28 acres (net); 15 of these acres are currently late-successional.

Riparian Reserve reductions would be scattered across the landscape in 8 units (as compared to 6 units in Alternative II), so they would be unlikely to compromise function for upland species, whose conservation is dependent on the Riparian Reserve network. The net reduction of 28 acres of Riparian Reserves represents 0.6% of the estimated Riparian Reserve acres in the analysis area.

EA Units 38 and 39 also contain potentially “high value” Riparian Reserves because of their potential to connect to the adjacent subwatershed and offer late-successional forest in the Middle Fork Coquille River corridor. In EA Unit 38, one side of a Riparian Reserve would be reduced to 110' to follow an existing road (approximately 2 acres of reduction); the Riparian Reserve reduction area would have been fairly ineffective for Riparian Reserve values since it was isolated from the rest of the Riparian Reserve network by the road. Additional reductions in Riparian Reserves in EA Unit 38 would be 6 acres on 2 intermittent streams. These 6 acres contain late-successional forest in the important Middle Fork Coquille River corridor which could potentially be used by bald eagles; although, it is not currently being used. The Riparian Reserve reduction in EA Unit 39 would affect a relatively insignificant area (approximately 1 acre of predominately alder) in a small part of an existing Riparian Reserve network which retained full interim Riparian Reserve widths.

All other impacts would be the same as Alternative II.

Roads (Issue 4)

Key Indicator: Open road density

The new construction impacts would be the same as Alternative II. There would be reduction in the open road density on BLM-managed land from 4.04 to 3.25 mi/mi² in the analysis area (see Table 1) which is slightly lower than in Alternative II. This alternative would also move the road density toward the target of 1.1 mi/mi².

Key Indicator: Impacts to wildlife

Overall, this alternative would provides similar net benefits to wildlife as Alternative II; more road corridors are created but additional roads are being decommissioned.

This alternative would create 2.2 miles of new road corridor, of which 1.0 would be fully decommissioned and revegetated. Even though closed, the remaining 1.2 miles of decommissioned (but not planted) new road construction could continue to present partial barriers to species such as small mammals until the road revegetates and covers over with forest litter (perhaps 15-25 years). By breaking or weakening connections between habitats, these barriers limit the ability of certain wildlife to recolonize habitats and isolate populations

making them more susceptible to local extirpation. Approximately 11.1 miles of existing roads would be decommissioned or closed, and the open road density would fall to 3.25 mi/mi². The proposed reduction in open road density would result in less disturbance to wildlife, and should allow increased utilization of available habitat. A reduction in open road density could also decrease the amount of roadside down-log habitat removed through theft and roadside salvage. Aquatic species such as amphibians are not expected to be impacted by road-related sedimentation (Section B of the Analysis File - Sediment Delivery).

Other impacts are the same as Alternative II.

Cumulative Effects (Alt. III)

Landscape Pattern (Issue 1)

Key Indicator: Late-successional forest characteristics

This alternative would remove 389 acres of late-successional forest in the short-term as compared to 274 acres in Alternative II. Therefore cumulative impacts would be slightly higher than Alternative II. Other cumulative effects would be similar to Alternative II.

Key Indicator: Habitat Connections

This alternative would harvest 190 acres of late-successional forest as compared to 152 in Alternative II. Together with actions in the adjacent subwatershed (Sandy Creek), a total of 463 acres of late-successional forest would be harvested from northeast Big Creek/northwest Sandy Creek as compared to 425 acres in Alternative II. Therefore cumulative impacts would be slightly higher than Alternative II.

Contribute to the District's Allowable Sale Quantity (ASQ)(Issue 2)

Alternative III provides approximately 7.6% of the decadal ASQ commitment for the District. The Connectivity volume is the same as Alternative II.

Riparian Reserve Boundary Functions (Issue 3)

Key Indicator: Large wood recruitment potential

Past harvest and stream cleaning activities have depleted large woody material and reduced the large wood recruitment potential on approximately half of the Riparian Reserve acreage. The proposed Riparian Reserve reductions amount to 30 acres (0.6 %) of Riparian Reserve in the analysis area, but are expected to maintain large wood recruitment to the affected streams, as discussed above. As illustrated in the Big Creek Riparian Reserve Evaluation (Figure C-4), the proportion of the Riparian Reserve with stands 160+ years of age is expected to increase from 2.2% at present to approximately 39% over the next 70 years. This maturation of Riparian Reserves is expected to enhance future LWD recruitment over time. Density

management treatments in the Riparian Reserves and the riparian restoration projects to be completed through Jobs-In-the-Woods are designed to further enhance LWD recruitment to streams on BLM-managed lands in the long term.

Other cumulative impacts would be the same as Alternative II.

Key Indicator: Riparian dependent/associated species

Same as Alternative II.

Roads (Issue 4)

Key Indicator: Open road density

Same as Alternative II.

Key Indicator: Impacts to wildlife

Same as Alternative II.

Other Environmental Effects

None of the EA units are in or near 1) Areas of critical environmental concern, 2) Farm lands, prime or unique, 3) Flood plains, 4) Wild and scenic rivers, or 5) Wilderness values. Therefore, none of the alternatives have impacts on these resources.

Common to All Action Alternatives

Air Quality

Prescribed burning would adhere to smoke management/air quality standards of the Clean Air Act and State Implementation Plan. This would mitigate the expected impacts.

Cultural Resource Values

The Big Creek Analysis Area has been the location of both prehistoric and historic cultural activities. Reported and recorded cultural resource locations are briefly described in the Big Creek Watershed Analysis (page 134). None of these locations are within or in the vicinity of the harvest units covered in this document. Field reconnaissance did not reveal the presence of additional cultural resources. Therefore, this project is not expected to effect prehistoric or historic cultural resources. However, if any potential cultural resources are encountered during project-related work, all work in the vicinity should stop and the District Archeologist must be notified at once.

Native American Treaty Rights

The Big Creek Analysis Area is within the boundaries of traditional territory described for the Coquille Indian Tribe. Although the Coquille Indian Tribe signed two treaties with the United States (in 1851 and 1855), neither were ratified by the Congress, and so are not in force. In

1996, Congress created the “Coquille Forest”, composed of fifty-four hundred acres of BLM-managed land in the vicinity of this analysis area. Four parcels of Coquille Forest land (comprising 1,047 acres) are found within this analysis area. The District has been involved with the Coquille Indian Tribe in the coordination of planned activities within the analysis area. None of the proposed alternatives are expected to affect Tribal uses.

Hazardous Materials/Solid Waste

No hazardous materials have been found to date in the action alternative units. Section R of the Analysis File contains the HazMat review. All Action Alternatives are subject to Federal and State regulatory guidelines for petroleum product use and storage. Spill Prevention, Control and Countermeasure Plans (SPCC) are required under the Oregon Forest Practices Act (Rule OAR 629-57-3600) and by Department of Environmental Quality (Rule OAR 340-108, inclusive). Spill containment capabilities on equipment sites are recommended.

Threatened and Endangered Species

The analysis area is within the range of five federally listed Threatened and Endangered Species: the northern spotted owl, marbled murrelet, bald eagle, peregrine falcon, and Oregon Coast coho salmon. In addition, Critical Habitat for northern spotted owls has been designated in the analysis area. Impacts to these species and Critical Habitat have been or will be addressed in consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. All mandatory terms and conditions from the Biological Opinions have been or will be incorporated in accordance with the Endangered Species Act.

Northern Spotted Owl

Regeneration timber harvest would remove suitable nesting, foraging, and dispersal habitat from within the home range of three of the known owl sites within or near the analysis area. Removal of habitat from within their home range exacerbates the critical condition of owl sites in the planning area and decreases site viability. The action alternatives of this proposal would result in a “May Affect, Likely to Adversely Affect” for the Northern Spotted owl, because habitat would be removed thereby reducing foraging and dispersal habitat. In addition, 83 acres (Alternative II) or 120 acres (Alternative III) of suitable habitat for spotted owls would be removed from designated Critical Habitat for spotted owls.

The conservation strategy for the Northern Spotted Owl within the Northwest Forest Plan relies primarily on a system of large reserve areas (LSRs), and maintenance of viable owl sites outside these reserves are not critical for the conservation of the species. Similarly, the LSR network and northern spotted owl Critical Habitat encompass nearly the same number of acres on the District (within < 0.5%).

Marbled Murrelet

Although all proposed harvest units and adjacent suitable habitat will have met the two year Marbled Murrelet survey protocol prior to harvest, the action alternatives of this proposal would result in a “May Affect, Likely to Adversely Affect” for the murrelet since the removal of potential future habitat that is currently unoccupied would preclude nesting in the future. If additional occupied behavior is detected, effected units will be dropped or

harvest season will be modified as appropriate to comply with the results of consultation with the USFWS.

EA Unit 30 is within 0.25 mile of an occupied murrelet site; however, through informal consultation with the USFWS, we determined that full seasonal restrictions were unnecessary because only a small part of the occupied stand is within 0.25 mile of EA Unit 30. The majority of the occupied stand is > 0.25 mile from the unit and is insulated from harvest unit activities by a ridge. The unit does not affect existing habitat. All murrelet activity in the occupied site was located over 0.5 mile from the unit. The survey station located nearest the unit did not receive any murrelet detections. To lessen the chance of disturbing nesting murrelets, harvest activities should not occur April 1 - July 1.

Bald Eagle

No bald eagles are known to nest within or near the analysis area. Suitable habitat may be present along the Middle Fork Coquille River. Isaacs (personal communication) felt bald eagles historically nested along the river as far up as Remote. Nests averaged 0.5 mile from water in Oregon (see Section I of the Analysis File). Effects to future bald eagle habitat were considered under the Landscape Pattern issue. Potential impacts to bald eagles will be consulted on and will meet the objectives outlined in the 1986 Recovery Plan for the Pacific Bald Eagle.

Peregrine Falcons

Peregrine falcons have not been observed within the analysis area. Although no known nest sites have been located, nest search surveys will be conducted on selected nearby cliffs to verify that peregrine falcons are not nesting in the area. Should peregrine falcons be observed nesting in or near the analysis area, seasonal restrictions may be placed to protect the nesting and brooding at the site. No activities would occur within 1.0 mile of a known, active falcon nest from 1 January - 15 August. Additional restrictions on habitat manipulation could be implemented in the nest vicinity.

Coho Salmon

Big Creek is within the Oregon Coast coho salmon ESU. The approximate distribution of coho salmon habitat within the analysis area is illustrated in the Big Creek WA (Figure III.6-5). Units 26 (CT), 27 (Regen), 28 (CT) and 35 (CT) are the only proposed units adjacent to coho salmon habitat. Units 26, 28 and 35 (commercial thinning units) would have at least a 220' no-harvest buffer along the associated fish-bearing streams; Unit 27 (regeneration harvest unit) would have a 440' no-harvest buffer along the associated fish-bearing stream. The proposed road construction would occur on stable benches and ridges with no stream crossings. Given the protection afforded by the Riparian Reserve and no-harvest buffers, consistency with the ACS objectives (see Section K), conformity with the NMFS March 18, 1997 Biological Opinion, and the additional provisions of the design features, the impacts of action alternatives on coho salmon are expected to be limited to those associated with short-term turbidity from culvert work. The proposed actions are subject to formal consultation with the NMFS, and will be modified as appropriate to comply with the resulting Biological Opinion.

Survey and Manage Species

Red Tree Vole

Red tree vole habitat calculations were rerun in May 1998 using a modified query and updated Forest Operation Inventory (FOI) database. All regeneration harvest units under Sandy-Remote, Rock Creek, and Indian Creek EAs were subtracted as a conservative estimate of habitat removal by these recent Middle Fork Coquille watershed timber sales. An estimated 45% of BLM-managed lands in the Middle Fork Coquille watershed meet definitions of red tree vole habitat. The figure drops to 44% if Alternative III regeneration harvest acres are subtracted. This value exceeds the recommended habitat threshold of 40% and eliminates the need for surveys (BLM Instruction Memorandum No. OR-97-009).

Del Norte Salamander

Protocol surveys for the Del Norte Salamander have been completed. Suitable habitat was searched but no Del Norte salamanders were located. The analysis area is approximately 13 miles north of the known range of the salamander.

Mollusks

According to latest guidance, surveys for Survey and Manage (S&M) mollusks will be required in the proposed harvest units. Protocol surveys are ongoing and appropriate management guides will be implemented on sites occupied by S&M mollusks prior to any ground-disturbing activities. The intent of these management guidelines is to ensure the local species viability.

Lichens, Bryophytes, Fungi, and Vascular Plants

Surveys are required for Survey and Manage Component 2 species (lichens, fungi, bryophytes, and vascular plants) and Protection Buffer species (bryophytes and fungi) for actions within the Big Creek Analysis Area. However, actions implemented prior to FY2000 do not require surveys for the Survey and Manage or Protection Buffer species that are included in Table 5 of the S&M EA. Surveys for these species will begin as soon as the technical feasibility problems can be solved (i.e. FY1999 actions may be surveyed if the feasibility problems are solved in time). Survey protocols for the remaining Component 2 lichens, bryophytes and vascular plants not included in Table 5 of the S&M EA have already been developed. Surveys for these species groups will be completed by summer 1999. A complete, up-to-date botanical report is available on file.

Protection Buffer survey protocols for the 2 species of bryophytes which potentially occur in the analysis area have not been developed, but surveys are currently being conducted. Protection Buffer fungi protocols have not been developed, but surveys are currently ongoing. Our surveys are occurring during the season when these species are visible.

Surveys are only required for those species whose ranges and habitats are known or suspected to occur within the project areas. These surveys will be conducted prior to each timber sale's notice of advertisement. A summary of the species to be surveyed, their key habitat features and timing of surveys are provided in Section N of the Analysis File.

Managing locations of S&M and Protection Buffer species found during field surveys will ensure the local species persistence. Sites will be managed according to established management recommendations.

Management of Protection Buffer species will be according to the protection buffers described on pages C-20 and C-27 in the ROD. Locations of Protection Buffer species will result in a land use allocation change from General Forest Management Area (GFMA) to an unmapped Late Successional Reserve (LSR) or managed late-successional area, depending on the species.

Although no surveys are required, Component 1 Survey and Manage species may be located while conducting other surveys. Sites for these species will be managed according to established management recommendations. Suspected Survey and Manage species will be sent to regional experts for verification.

Noxious Weeds

Noxious weeds, such as Scotch broom, French broom, gorse, and tansy ragwort are currently scattered throughout the analysis area and occur primarily along roads and in disturbed areas. Any disturbance is likely to increase the chances of noxious weed infestation. The design features outlined in the action alternatives (i.e., washing of vehicles prior to entry and mulching/seeding) would help reduce the risk of noxious weed spread.

Sensitive Plant Survey

No negative impacts are expected to any special status plant species occurring within the analysis area. Surveys for those species suspected to occur within the analysis area is currently ongoing. If locations of special status plants are found, appropriate protection measures will be implemented. A description of the special status plant pre-field review is included in Section N of the Analysis File.

Irreversible and Irretrievable Commitment of Resources

Some irreversible and irretrievable commitment of resources would result from the proposed actions. Crushed rock from quarries would be committed to reconstruction and construction of the road system. Energy used to grow, manage, and harvest trees, and in other management activities is generally irretrievable. Irreversible and irretrievable commitments as stated above are discussed in the Coos Bay District FRMP.

V. LIST OF PREPARERS

The following is a list of the Big Creek Analysis Area Interdisciplinary Team members:

Core ID Team Members

Vicki Ursitti	Fisheries Biologist
Michael Kellett	Fisheries Biologist
John Guetterman	Wildlife Biologist
J. Michael Oxford	Forester/Team Lead

Other Contributors:

Dan Carpenter	Hydrologist
Jay Flora	GIS/ARD Coordinator
Steve Fowler	Silviculture
Nick Jansen	Fuels Management
Jim Kowalick	Silviculture
Paul Leman	Forester
Bruce Rittenhouse	Botanist
Stephan Samuels	Archeologist
Rod Smith	Engineering
Dale Stewart	Soil Scientist
Timothy Votaw	Environmental Protection Specialist

Appendix

Table of Contents

Appendix 1	Design Features for Action Alternatives and Monitoring
Appendix 2	Harvest Unit Details
Appendix 3	Road Construction, Improvement, and Renovation Maps
Appendix 4	Road Closure Recommendations

Appendix 1

Design Features for Action Alternatives and Monitoring

Appendix 1

Design Features for Action Alternatives

Design features include timber sale design, contract stipulations, and prescribed activities to be accomplished by the BLM or timber sale purchaser. The objective of these design features is to maintain or enhance the quality, quantity, and productivity of the resources in the project area.

- ! Require one-end suspension in all skyline units and areas yarded with ground-based equipment.
- ! Utilize designated skid trails when ground-based harvesting systems are used. Sub-soil these trails after the completion of harvest activities, prior to first rainy season, and provide water bars as necessary. Restrict to dry season conditions.
- ! In the commercial thinning and density management thinning units, all trees designated for harvest will be cut into lengths prior to yarding, so as not to damage the residual stand.
- ! To minimize damage to residual trees in the commercial thinning and density management thinning units, do not allow falling or yarding between March 1 and June 30.
- ! In the commercial thinning and density management thinning units, limb and top all trees within the unit prior to yarding.
- ! Density management thinning (DMT) silvicultural prescriptions for Riparian Reserves are similar to the adjacent uplands, except for portion of EA Units 26, 28, and 35. Treatments in these portions include thinning with a widely variable spacing down to 70-235 trees/acre or releasing selected individual trees. Some trees may be girdled and left standing, others cut and left in place; however, most would be harvested.
- ! Directionally fall trees away from all Riparian Reserves associated with regeneration harvest units.
- ! Where density management thinning occurs within Riparian Reserves, directionally fall trees away from all stream channels. Maintain full suspension above stream channels and banks during yarding.
- ! Harvest and reserve tree marking guidelines are outlined in Section I of the Analysis File.
- ! Leave all existing snags except where doing so would create a safety hazard. Leave all existing down logs except in areas with patches of blowdown. In blowdown areas, occasional existing down logs may be removed from outside of wildlife tree areas (clumps or concentrations of scattered wildlife trees).

- ! Wildlife tree selection should represent the same ratio of conifer tree species present in the units. If Port-Orford-cedar (POC) is selected as wildlife trees, they should not be within 50 feet of road edges or infected pockets. Any POC selected as scattered wildlife trees should be at least 50 feet apart.
- ! Post site preparation, 120 linear feet of class 1-2 down logs, reflecting the species mix of the unit, should be evenly distributed through all portions of the regeneration harvest units. All logs should have bark intact, be at least 16 inches diameter at the large end, be at least 16 feet in length, and be relatively uncharred (approximately < 30% charred surface). All down logs should come from on-site.
- ! Approximately 70% of the wildlife trees should be in clumps 0.5-2.5 acres or greater in size. The remaining 30% should be scattered throughout the unit or in smaller clumps. Wildlife tree clumps should often be centered around existing snags and down logs. The intent is to have wildlife trees scattered throughout the unit in variously sized clumps and individually.
- ! In identified regeneration harvest units, top 1-2 wildlife trees/acre to create immediate snag habitat. Approximately 70% of topped trees should be in wildlife tree clumps. Top trees after site preparation. In commercial thinning and density management harvest units, top 1 wildlife tree per 5 acres. In all harvest units, tree topping requirements should be adjusted if snags are created inadvertently during yarding operations or by wind. See Table W-3 in Section I of the Analysis for further details.
- ! Avoid marking wildlife trees within 100 feet uphill and 50 feet downhill of open roads to reduce theft.
- ! To avoid disturbance to peregrine falcons potentially nesting on the cliffs near EA Units 3, 4, and 5, no harvest-related activities should occur during the nesting season (approximately Feb 1 - July 31) unless protocol surveys can be completed documenting absence of nesting peregrine falcons.
- ! All or portions of EA Units 19, 25, 26, 27, 28, 35, and 36 are within 0.25 miles of known marbled murrelet occupied sites: therefore, yarding and felling would not occur between April 1 and August 5 in those portions. From August 6 through September 15, there would be daily timing restrictions confining activities between two hours after sunrise and two hours before sunset.
- ! All or portions of EA Units 8, 11, and 29, are within 0.25 miles of known marbled murrelet occupied sites. These units will also remove suitable (unoccupied) habitat; therefore, yarding and felling will not occur between April 1 and September 15.
- ! A portion of EA Unit 30 is within 0.25 miles of a known marbled murrelet occupied site; however, most of the occupied site is > 0.25 miles from the unit and all the murrelet activity was > 0.5 mile away. Yarding and felling will not occur April 1 - July 1 to reduce the chance of disturbing nesting murrelets.
- ! A portion of EA Unit 12 is within 0.25 miles of known marbled murrelet and spotted owl site. The unit will also remove suitable marbled murrelet habitat; therefore, yarding and

felling will not occur between March 1 - September 15.

- ! A portion of EA Unit 20 is within 0.25 miles of known marbled murrelet and spotted owl site; therefore, yarding and felling will not occur between March 1 - August 5. From August 6 through September 15, daily timing restrictions will apply.
- ! Additional units may require seasonal or timing restrictions if remaining murrelet surveys discover new occupied sites.
- ! Guyline anchors in the LSR adjacent to units 8 and 12 must be approved by the BLM prior to their use to insure marbled murrelet nest trees are not impacted. Guyline trees will be felled and not removed.
- ! The prescription for site preparation will be determined after harvest. Alternative types of site preparation could include swamper burn, pile and burn, or broadcast burn. Broadcast burning would be done under early "spring-like conditions" and result in a low intensity burn. Where hardwood conversions are on northfacing slopes, such as EA Unit 40, burning may occur in mid summer or early fall.
- ! For units broadcast burned where site preparation could damage down logs, extra wildlife trees would be identified during layout and contract preparation to be left and felled after site preparation as necessary to ensure down log retention objectives are met.
- ! All or portions of EA Units 8, 11, 12, 19, 20, 25, 26, 27, 28, 29, 35, and 36 are within 0.25 miles of known spotted owl or marbled murrelet sites; therefore, if possible, site preparation activities should not occur between April 1 (March 1 for units 12 and 20) and August 5. From August 6 through September 15, daily timing restrictions apply. If seasonal restrictions are not practical due to spring burn weather requirements, the daily timing restrictions should be implemented to reduce impacts to marbled murrelets.
- ! For units where slash is piled and burned, leave approximately one unburned brush pile/5 acres to serve as habitat for mammals, birds, and herptiles.
- ! Gross yard hardwoods (5" in diameter and 10' in length) in EA Units 12 and 20 where falling and leaving hardwoods could limit tree planting.
- ! Slash all woody vegetation taller than 10 feet within two weeks following yarding in EA Units 4, 9, and 10 due to the high percentage of woody brush.
- ! Roads: Specific treatments for road closures are identified in Appendix 4.
- ! When replacing stream-crossing culverts on perennial streams, provide physically unobstructed passage for aquatic-dependent species.
- ! For the skid road proposed within the Riparian Reserves adjacent to EA Units 31 and 41, construction and full decommissioning will occur in one season, and location will be limited to ridgetops and benches. No hauling will occur on the skid road, and use will be limited to one summer/dry season.

- ! All roads designated for winter use must be surfaced with an approved lift of rock. Construction activities would occur during summer or fall (prior to winter storm activity). Roads would be closed according to the Transportation Management Objectives (TMO) plan. Roads designated for summer use only in regeneration harvest units would be sub-soil tilled, mulched, grass seeded (in accordance with District Native Plant Restoration Policy), water barred (where appropriate) and blocked prior to winter storm activity. Within one year of completion of timber sale activity, roads designated to be decommissioned would be blocked, have stream crossing culverts removed, and have waterbars or dips installed as needed to restore hydrologic function.
- ! For roads to be fully decommissioned, remove all fills and culverts, restore banks to natural stable grade, decompact road surfaces, waterbar, mulch and seed (see District native seed policy) and close all road surfaces, as necessary to restore pre-road hydrologic function and minimize the risk of road-related sediment delivery to streams. Full decommissioning shall fracture the soil at the compacted depth (usually 18") from the bottom up without turning over the soil. This work should be accomplished by the use of an approved sub-soiler. The equipment should be capable of loosening the soil over 80% of the compacted zone (area times depth). Tilling shall occur during the dry season or when the soil moisture is less than 25%.
- ! Road renovation should include spot rocking across perennial stream channels. Spot rocking or possible cementitious application for 100 feet on each side of the channel would help prevent sediment delivery.
- ! New road construction within Riparian Reserves should be storm proofed if not closed and fully decommissioned the same season of disturbance. The road segments should be storm proofed by mid-October if planned to be used the following year. Storm proofing means mulching at a minimum of 2000 lbs./ac, using wood chips or straw, and seeding and fertilizing with a district approved erosion control seed mix.
- ! If winter haul on gravel roads is planned, then the following additional Best Management Practices should be implemented to prevent sediment delivery at or near stream crossings along the haul route. The sediment prevention measures must be in place, before winter haul begins. They include:

Apply an additional lift of rock to the area of road that can influence the stream if rill erosion is evident in the road tread near live stream crossings.

Contain any offsite movement of sediment from the road or ditchflow near streams with silt fence or sediment entrapping blankets. Such control measures must allow for the free passage of water without detention or plugging. These control structures and applications should receive frequent maintenance, and be removed at the completion of haul.

If the ground is already saturated from winter rains and more than 2 inches of precipitation is predicted in the project area over the next 24 hours, then winter haul must be suspended. Operators need to review the Intellicast internet site: <http://www.intellicast.com/help/weather/content.html#precip>
This site displays high resolution data set, NOWrad's 2km resolution reflectivity

data, for western Oregon, from which precipitation estimates in colorized contoured bands in inches are made.

- ! Do not harvest, cut, or otherwise remove POC from the no-treatment portion of the Riparian Reserves. Where DMT occurs within Riparian Reserves, POC would be harvested to at least a 50' spacing around individual trees/groups to reduce spread of *Phytophthora lateralis* (PL).
- ! In commercial thinning units, POC leave trees or groups should be spaced at least 50 feet apart.
- ! The basic strategy for POC management in the Big Creek Analysis Area is: 1) to manage Low Risk Sites for the long term POC population viability; 2) to limit the spread of PL within the High Risk Sites; and 3) to prevent disease movement into areas with Low Risk. Design features and mitigation consist of active treatments employed on the High Risk Sites (ie. roads and streams) and passive management of Low Risk Sites across the landscape. The treatments for the High Risk Sites include: 1) wash all road construction and logging equipment prior to move in; 2) require rocking of roads prior to fall rains; 3) restrict timber haul to the dry season for following EA Units: 4, 5, 10, 24, 30, 31, 32, 37, 38, 39, 40, and 41; 4) sanitize unmerchantable POC and Pacific yew 25 feet uphill and 30 feet downhill from edge of running surface on all haul roads on BLM-managed lands prior to timber haul (this includes newly constructed dirt spurs and all harvest landings); 5) harvest all merchantable POC 25' uphill and 50' downhill from road edges outside of Riparian Reserves; cut and leave POC within Riparian Reserves; 6) POC wildlife trees should be at least 50' below roads and spaced 50' apart; and 7) consider planting POC seedlings outside of infection sites, 50 feet from roads and outside of Riparian Reserves in all regeneration, hardwood conversions and brush conversion units.
- ! Apply marbled murrelet daily timing restrictions to POC and Pacific yew roadside sanitation treatments in Brownson Creek, Axe Creek, T.28S., R.10W., Sec. 31 area, and EA Unit 8.
- ! Stockpile 50 conifer logs minimum of 16" diameter and 34' long for use in aquatic habitat restoration projects.
- ! The existing recreational bike trail in EA Unit 24 and the west portion of EA Unit 25 will be cleared of slash after completion of harvest activities.
- ! Best Management Practices (BMP's) would be followed for all actions as listed in Section H pages 69 - 74, Volume 2, Coos Bay District Final Proposed Resource Management Plan, 1994.

Monitoring

Monitoring guidelines are established in the 1995 FRMP/ROD, pp. L-3, L-4, L8, & L9, and the 1994 Standards and Guidelines, pp. E-1 to E-10.

Monitor the effectiveness of roadside sanitation of POC and Pacific Yew, road closures, and equipment washing in limiting the spread of PL into Low Risk areas.

The Low Risk Areas will be surveyed by use of aerial photos or infrared imagery to detect potential spread of PL from High Risk Areas along roads sanitized and harvest units. This survey would be conducted approximately 5 years from now, when imagery becomes available.

A spot sample of the roadsides will be done on the ground where previous infection centers were mapped and areas of green POC were cut. This should occur 3 years and 6 years after completion of the timber sale contract. This will be done to see if PL has spread into Low Risk areas outside of the sanitized roadside area.

All roads closed as a result of the action alternatives would be monitored to determine whether design features were implemented, and were effective one year after implementation.

A representative sample of streams that were classified as either perennial or intermittent based on biological indicators (as described in the Big Creek Riparian Reserve Evaluation) will be re-evaluated for stream flow in the low-flow period to test the validity and accuracy of these techniques.

Appendix 2

Harvest Unit Details

**Big Creek Analysis Area EA
Alternative II - Proposed Action**

EA Unit No.	Photo #	Legal	Acres*	Volume/Acre MBF	Total Volume MBF*	Treatment	FOI Symbol	Comments
3	15-36-56	28-10-34	42	55	2,310	Regen	D4= 1860	
4	15-36-54	28-10-34/29-10-3	25	55	1,375	Regen	D4= 1860	
5	15-36-54	29-10-3	22	53	1,166	Regen	D4= 1860	Rip. Res. Adjustments
6	15-36-46	29-10-9	18	40	720	Regen	D4= 1880	
7	15-36-46	29-10-9	13	50	650	Regen	D4= 1880	Rip. Res. Adjustments
8	16-34-147	29-10-8	47	50	2,350	Regen	D4= 1890	
9	16-34-151	28-10-29	31	45	1,395	Regen	D4= 1890	
10	17-33-49	28-10-31	13	40	520	Regen	D4= 1890	
11	17-33-47	28-10-31/29-10-6	27	45	1,215	Regen	D4=1890/D4=1850	Rip. Res. Adjustments
12	17-33-46	29-10-6	25	45	1,125	Regen	D4=1900	Rip. Res. Adjustments
19	17-32-146	29-11-1	16	25	400	Regen	HC RA3= 1920	Hardwood Conversion
20	17-32-146	28-10-31	14	0	0	Regen	HC RA3= 1920	Hardwood Conversion, TPCC Adjustment
25	17-32-141	29-11-23/24	18	10	180	CT	D2= 1968	DM in Rip. Res. (1 ac)
26	38-31-52	29-11-2/11	51	9	459	CT	D2= 1962	DM in Rip. Res. (25 ac)
27	38-31-52	29-11-11	17	55	935	Regen	D3= 1930	Rip. Res. Adjustments
28	38-31-51	29-11-11	14	11	154	CT	D2= 1935	DM in Rip. Res. (6 ac)
29	38-31-51	29-11-14	22	35	770	Regen	D4= 1900/HC RA3= 1900	Includes 3 acres Hdwd Conversion
30	38-31-50	29-11-14	15	40	600	Regen	D3= 1935	Rip. Res. Adjustments, includes 1 acre Hdwd Conversion
31	38-31-48	29-11-23/26	16	55	880	Regen	D4= 1890	
32	38-31-48	29-11-23	12	7	84	CT	D2= 1960	DM in Rip. Res. (2 ac)
35	8-30-7	29-11-10	98	8	784	CT	D2= 1965	DM in Rip. Res. (37 ac)
36	8-30-6	29-11-10	52	8	416	CT	D2= 1958	DM in Rip. Res. (19 ac)
36DM	8-30-6	29-11-15	11	6	66	DMT	D2= 1967	
40	38-31-48	29-11-23	3	0	0	Regen	HC RA= 1960	Hardwood Conversion
41	38-31-48	29-11-23	5	0	0	Regen	HC RA= 1958	Hardwood Conversion, includes 1 ac. in Rip. Res.
A	38-31-51	29-11-14	6	0	0	BC	BC 1958	Brush Conversion, includes 2 ac. in Rip. Res.
			633			18,554		

Connectivity

* Unit acres and volumes include Riparian Reserve Treatments.

Regen = Regeneration Harvest

CT = Commercial Thinning

DMT = Density Management in Connectivity

BC = Brush Conversion

April 30, 1998

G:/cb/mra/t-sales/ea-s/bigcreek/bgcrk.wk4

**Big Creek Analysis Area EA
Alternative II - Proposed Action**

EA Unit No.	Photo #	Legal	Stations Renovation	Improvement (feet)	N.C. Dirt (feet)	N.C. Gravel (feet)	N.C Cementitious (feet)	Comments
3	15-36-56	28-10-34	27	0	0	0	0	1 existing landing plus 3 roadside landings
4	15-36-54	28-10-34/29-10-3	0	0	1,200	0	0	Grade under 20%, N.C. - Full Decom.
5	15-36-54	29-10-3	0	0	500	0	0	N.C. - Full Decom.
6	15-36-46	29-10-9	0	0	0	0	900	N.C. - Full Decom.
7	15-36-46	29-10-9	9	0	0	0	0	1 existing landing plus 1 roadside landing
8	16-34-147	29-10-8	85	900	0	200	0	Plus 3 roadside landings, N.C. - Decom.
9	16-34-151	28-10-29	20	0	0	0	0	3 roadside landings
10	17-33-49	28-10-31	5	0	400	0	0	Plus 1 roadside landing, N.C. truck assist & than Full Decom.
11	17-33-47	28-10-31/29-10-6	98	0	0	150	0	Plus 2 roadside landings, N.C. Decom.
12	17-33-46	29-10-6	16	0	0	0	0	1 roadside landing
19	17-32-146	29-11-1	0	0	0	800	0	Grade under 20%, N.C. - Decom.
20	17-32-146	28-10-31	32	0	0	0	850	Grade under 20%, N.C. - Full Decom.
25	17-32-141	29-11-23/24	120	0	0	200	0	Plus roadside and existing landings (CT), N.C. - Decom.
26	38-31-52	29-11-2/11	49	0	0	1,200	0	Plus roadside landings (CT), N.C. - Decom.
27	38-31-52	29-11-11	32	2,600	0	1,350	0	3 landings, Improvement & N.C. - Decom.
28	38-31-51	29-11-11	117	0	0	0	0	Roadside & existing landings (CT), N.C. - Decom.
29	38-31-51	29-11-14	20	0	0	500	0	2 landings, N.C. - Decom.
30	38-31-50	29-11-14	70	0	400	0	0	N.C. - Full Decom.
31	38-31-48	29-11-23/26	0	0	750	0	0	2 landings, 150' NC in Riparian Reserve, N.C. - Full Decom.
32	38-31-48	29-11-23	36	0	0	0	0	Roadside landings (CT)
35	8-30-7	29-11-10	11	1,300	0	1,250	0	Plus roadside and existing landings (CT), Imp. & NC - Decom.
36	8-30-6	29-11-10	0	0	0	0	0	Roadside landings (CT)
36DM	8-30-6	29-11-15	0	0	0	0	0	Roadside landings (Ct)
40	38-31-48	29-11-23	0	0	0	0	0	Roadside landings
41	38-31-48	29-11-23	0	0	0	0	0	1,000' designated skid road (~400' in Rip. Res.) - Full Decom.
A	38-31-51	29-11-14	0	0	0	0	0	
				747	4,800	3,250	5,650	1,750

Connectivity

N. C. = New Construction

1 Station = 100 feet

**Big Creek Analysis Area EA
Alternative III - Alternative Action**

EA Unit No.	Photo #	Legal	Acres	Volume/Acre MBF	Total Volume MBF	Treatment	FOI Symbol	Comments
2	15-36-56	28-10-27/34	37	60	2,220	Regen	D4= 1860	
3	15-36-56	28-10-34	42	55	2,310	Regen	D4= 1860	
4	15-36-54	28-10-34/29-10-3	25	55	1,375	Regen	D4= 1860	
5	15-36-54	29-10-3	22	53	1,166	Regen	D4= 1860	Rip. Res. Adjustments
6	15-36-46	29-10-9	18	40	720	Regen	D4= 1880	
7	15-36-46	29-10-9	13	50	650	Regen	D4= 1880	Rip. Res. Adjustments
8	16-34-147	29-10-8	47	50	2,350	Regen	D4= 1890	
9	16-34-151	28-10-29	31	45	1,395	Regen	D4= 1890	
10	17-33-49	28-10-31	13	40	520	Regen	D4= 1890	
11	17-33-47	28-10-31/29-10-6	27	45	1,215	Regen	D4=1890/D4=1850	Rip. Res. Adjustments
12	17-33-46	29-10-6	25	45	1,125	Regen	D4=1900	Rip. Res. Adjustments
19	17-32-146	29-11-1	16	25	400	Regen	HC RA3= 1920	Hardwood Conversion
20	17-32-146	28-10-31	14	0	0	Regen	HC RA3= 1920	Hardwood Conversion, TPCC Adjustment
24	17-32-142	29-11-24	5	53	265	Regen	D4= 1860	
25	17-32-141	29-11-23/24	18	10	180	CT	D2= 1968	DM in Rip. Res. (1 ac)
26	38-31-52	29-11-2/11	51	9	459	CT	D2= 1962	DM in Rip. Res. (25 ac)
27	38-31-52	29-11-11	17	55	935	Regen	D3= 1930	Rip. Res. Adjustments
28	38-31-51	29-11-11	14	11	154	CT	D2= 1935	DM in Rip. Res. (6 ac)
29	38-31-51	29-11-14	22	35	770	Regen	D4= 1900/HC RA3= 1900	Includes 3 acres Hdwd Conversion
30	38-31-50	29-11-14	15	40	600	Regen	D3= 1935	Rip. Res. Adjustments, includes 1 acre Hdwd Conversion
31	38-31-48	29-11-23/26	16	55	880	Regen	D4= 1890	
32	38-31-48	29-11-23	12	7	84	CT	D2= 1960	DM in Rip. Res. (2 ac)
35	8-30-7	29-11-10	98	8	784	CT	D2= 1965	DM in Rip. Res. (37 ac)
36	8-30-6	29-11-10	52	8	416	CT	D2= 1958	DM in Rip. Res. (19 ac)
36DM	8-30-6	29-11-15	11	6	66	DMT	D2= 1967	
37	5-29-39	29-11-21	15	50	750	Regen	D4= 1880	Priority 2 unit (WA)
38	5-29-39	29-11-21	32	53	1,696	Regen	D4= 1880	Rip Res. Adjustments, Priority 2 unit (WA)
39	5-29-38	29-11-21	33	50	1,650	Regen	D4= 1880	Rip Res. Adjustments, Priority 2 unit (WA)
40	38-31-48	29-11-23	3	0	0	Regen	HC RA= 1960	Hardwood Conversion
41	38-31-48	29-11-23	5	0	0	Regen	HC RA= 1958	Hardwood Conversion, includes 1 ac. in Rip. Res.
A	38-31-51	29-11-14	6	0	0	BC	BC 1958	Brush Conversion, includes 2 ac. in Rip. Res.
			755			25,135		

Connectivity

* Unit acres and volumes include Riparian Reserve Treatments.

Regen = Regeneration Harvest

CT = Commercial Thinning

DMT = Density Management in Connectivity

BC = Brush Conversion

April 30, 1998

G:/cb/mra/t-sales/ea-s/bigcreek/bgcrk.wk4

**Big Creek Analysis Area EA
Alternative III - Alternative Action**

EA Unit No.	Photo #	Legal	Stations Renovation	Improvement (feet)	N.C. Dirt (feet)	N.C. Gravel (feet)	N.C Cementitious (feet)	Comments
2	15-36-56	28-10-27/34	25	200	0	600	0	Plus 2 roadside landings, N.C. - Decom.
3	15-36-56	28-10-34	23	0	0	0	0	1 existing landing plus 3 roadside landings
4	15-36-54	28-10-34/29-10-3	0	0	1,200	0	0	Grade under 20%, N.C. - Full Decom.
5	15-36-54	29-10-3	0	0	500	0	0	N.C. - Full Decom.
6	15-36-46	29-10-9	0	0	0	0	900	N.C. - Full Decom.
7	15-36-46	29-10-9	9	0	0	0	0	1 existing landing plus 1 roadside landing
8	16-34-147	29-10-8	85	900	0	200	0	Plus 3 roadside landings, N.C. - Decom.
9	16-34-151	28-10-29	20	0	0	0	0	3 roadside landings
10	17-33-49	28-10-31	5	0	400	0	0	Plus 1 roadside landing, N.C. truck assist & than Full Decom.
11	17-33-47	28-10-31/29-10-6	98	0	0	150	0	Plus 2 roadside landings, N.C. Decom.
12	17-33-46	29-10-6	16	0	0	0	0	1 roadside landing
19	17-32-146	29-11-1	0	0	0	800	0	Grade under 20%, N.C. - Decom.
20	17-32-146	28-10-31	32	0	0	0	850	Grade under 20%, N.C. - Full Decom.
24	17-32-142	29-11-24	0	0	350	0	0	Optional designated skid road, N.C. - Full Decom.
25	17-32-141	29-11-23/24	120	0	0	200	0	Plus roadside and existing landings (CT), N.C. - Decom.
26	38-31-52	29-11-2/11	49	0	0	1,200	0	Plus roadside landings (CT), N.C. - Decom.
27	38-31-52	29-11-11	32	2,600	0	1,350	0	3 landings, Improvement & N.C. - Decom.
28	38-31-51	29-11-11	117	0	0	0	0	Roadside & existing landings (CT), N.C. - Decom.
29	38-31-51	29-11-14	20	0	0	500	0	2 landings, N.C. - Decom.
30	38-31-50	29-11-14	70	0	400	0	0	N.C. - Full Decom.
31	38-31-48	29-11-23/26	0	0	750	0	0	2 landings, 150' NC in Riparian Reserve, N.C. - Full Decom.
32	38-31-48	29-11-23	36	0	0	0	0	Roadside landings (CT)
35	8-30-7	29-11-10	11	1,300	0	1,250	0	Plus roadside and existing landings (CT), Imp. & NC - Decom.
36	8-30-6	29-11-10	0	0	0	0	0	Roadside landings (CT)
36DM	8-30-6	29-11-15	0	0	0	0	0	Roadside landings (Ct)
37	5-29-39	29-11-21	0	0	0	0	0	2 roadside landings
38	5-29-39	29-11-21	0	0	0	0	0	4 roadside landings
39	5-29-38	29-11-21	125	0	0	0	0	2 roadside landings
40	38-31-48	29-11-23	0	0	0	0	0	Roadside landings
41	38-31-48	29-11-23	0	0	0	0	0	1,000' designated skid road (~400' in Rip. Res.) - Full Decom.
A	38-31-51	29-11-14	0	0	0	0	0	
				893	5,000	3,600	6,250	1,750

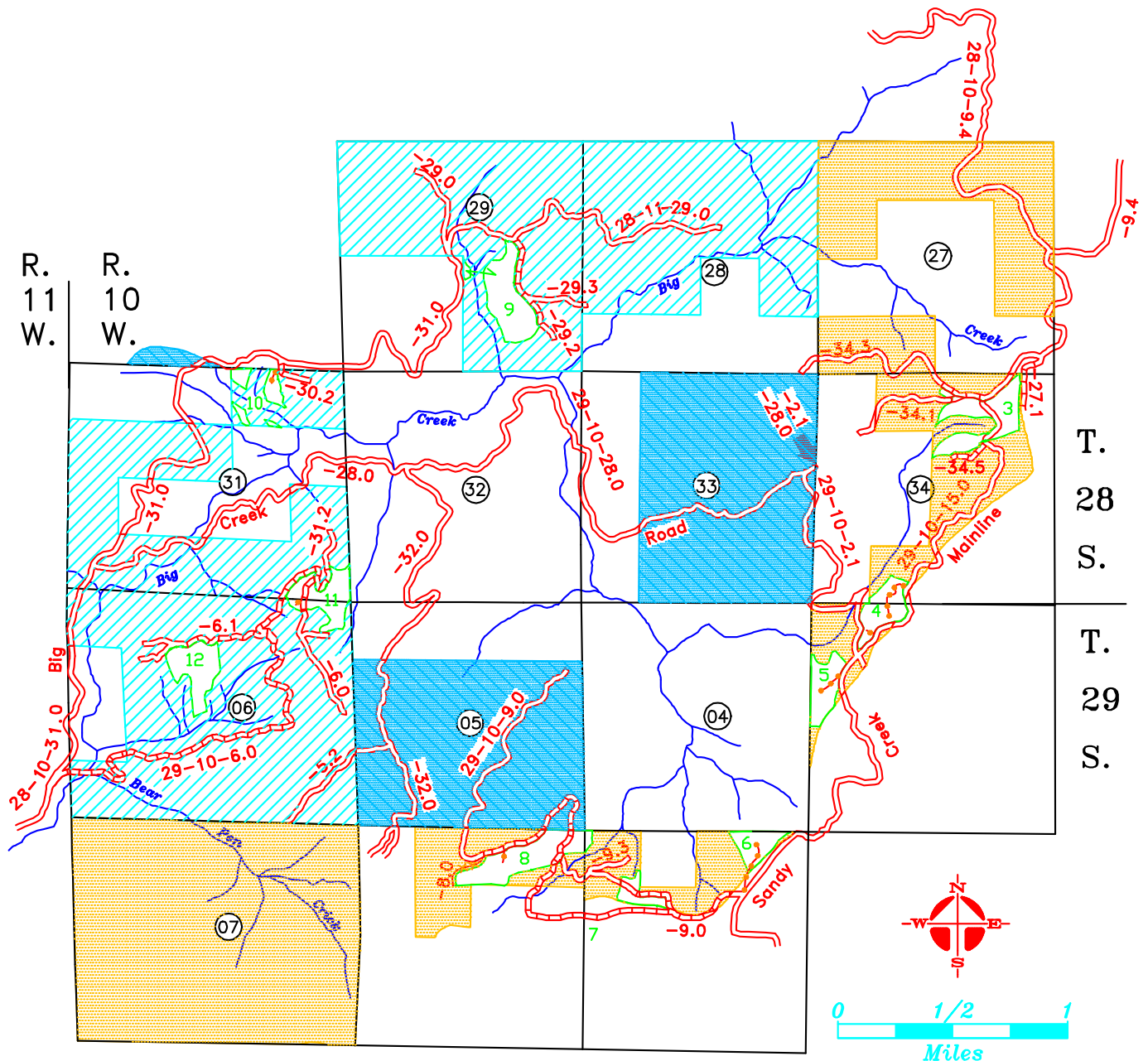
Connectivity

N. C. = New Construction
1 Station = 100 feet

Appendix 3

Road Construction, Improvement, and Renovation Maps

Big Creek Analysis Area EA Alternative II – Proposed Action – Roads(East 1/2)



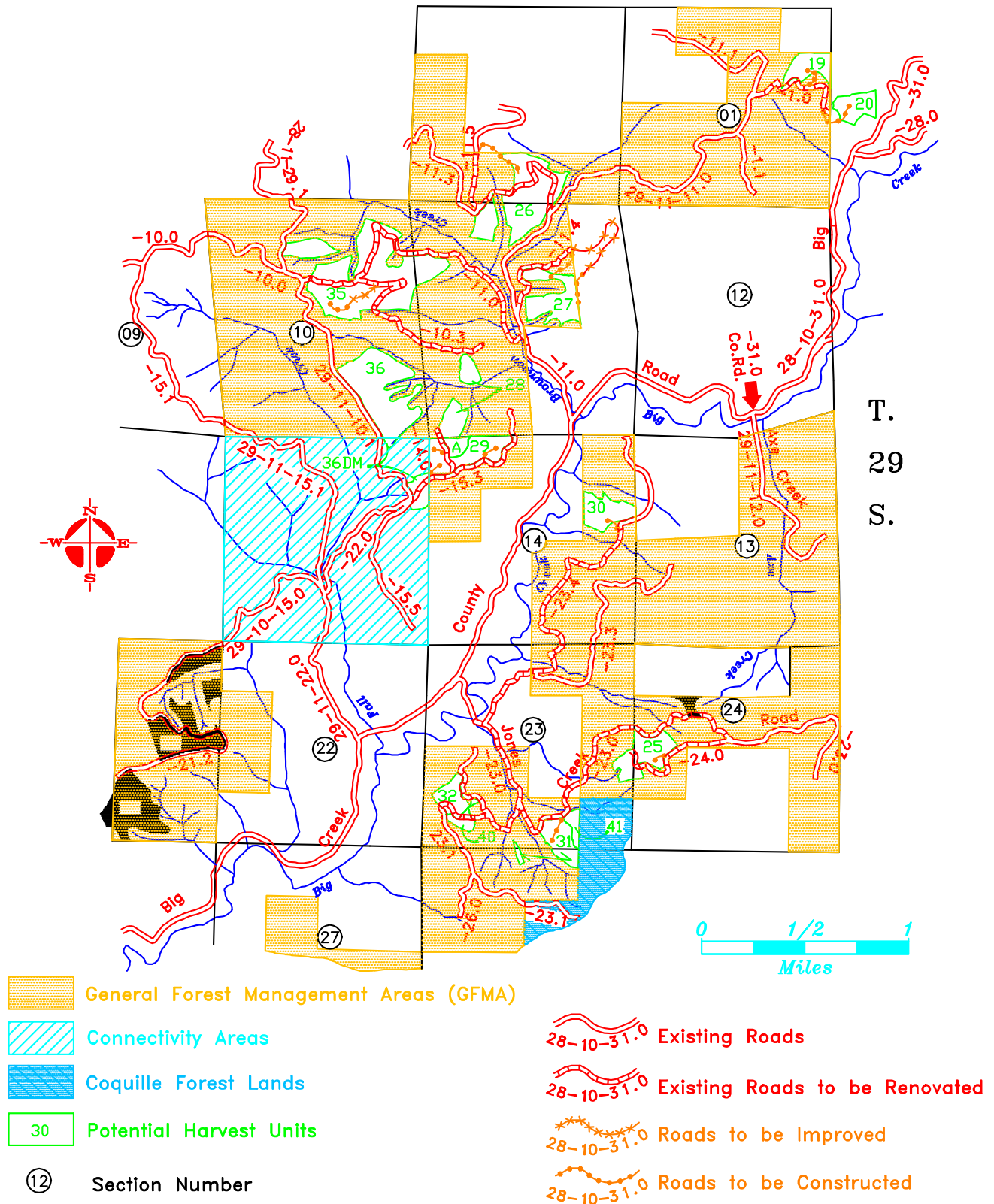
- General Forest Management Areas (GFMA)
- Connectivity Areas
- Coquille Forest Lands
- 30 Potential Harvest Units

⑫ Section Number

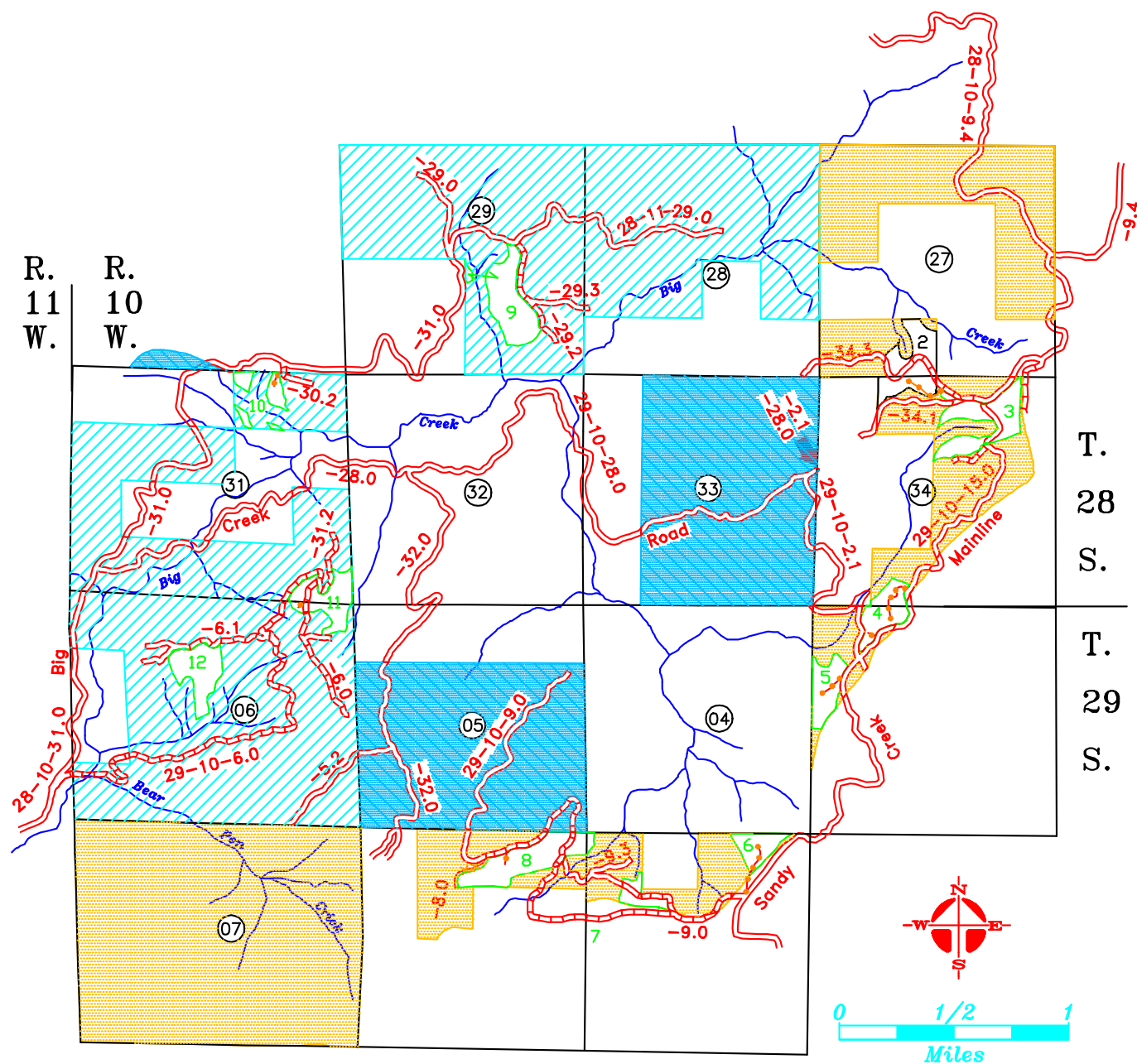
- Existing Roads
- Existing Roads to be Renovated
- Roads to be Improved
- Roads to be Constructed

Big Creek Analysis Area EA Alternative II – Proposed Action – Roads(West 1/2)

R. 11 W.



Big Creek Analysis Area EA Alternative III – Alternative Action – Roads(East 1/2)



General Forest Management Areas (GFMA)

Connectivity Areas

Coquille Forest Lands

Potential Harvest Units

Section Number

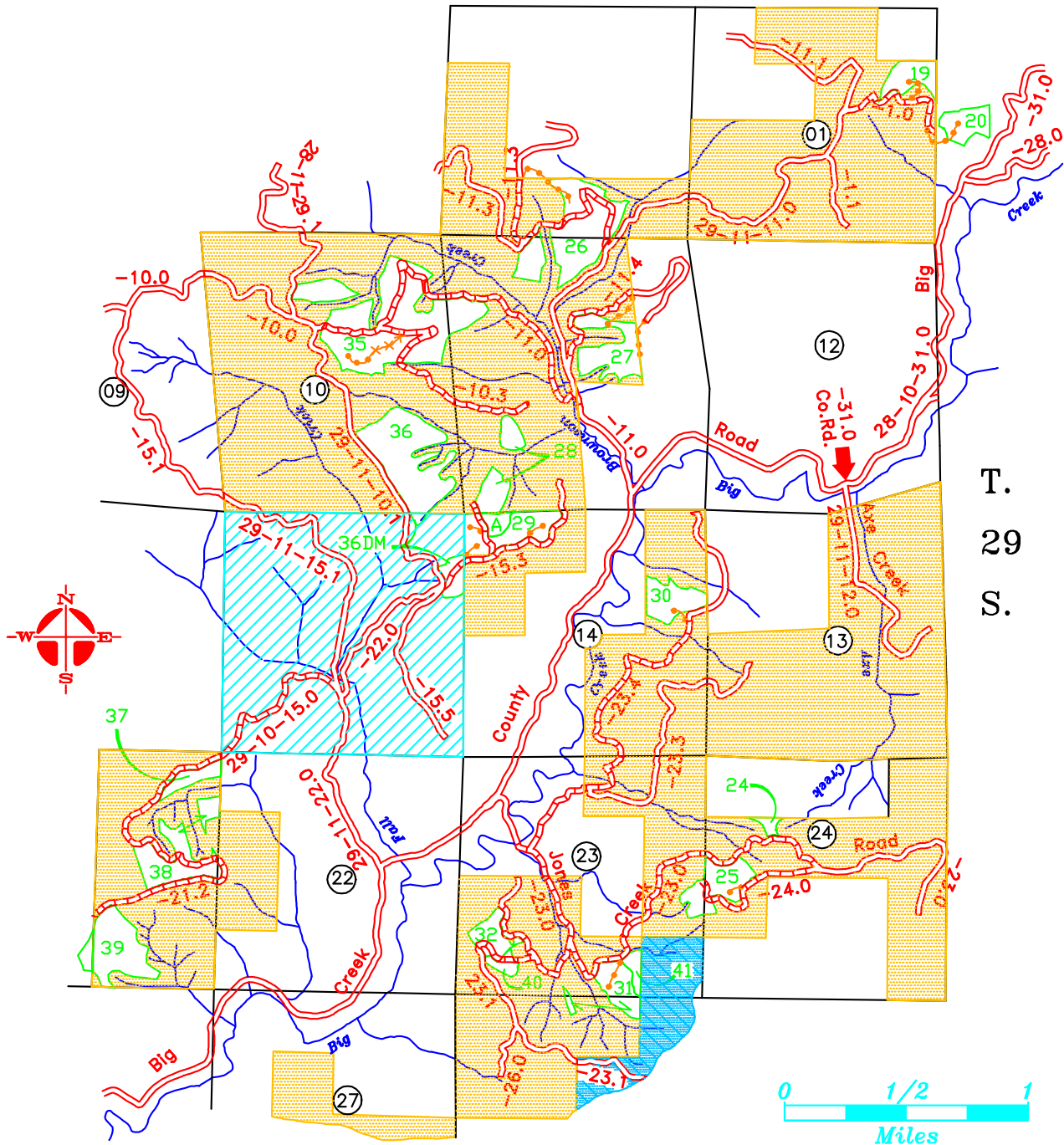
Existing Roads

Existing Roads to be Renovated

Roads to be Improved

Roads to be Constructed

Big Creek Analysis Area EA Alternative III – Alternative Action – Roads(West 1/2) R. 11 W.



 General Forest Management Areas (GFMA)

 Connectivity Areas

 Coquille Forest Lands

 Potential Harvest Units

 Section Number

 Existing Roads

 Existing Roads to be Renovated

 Roads to be Improved

 Roads to be Constructed

Appendix 4

Road Closure Recommendations

**Big Creek Analysis Area EA
Road Closure Recommendations
Alternative II - Proposed Action**

The following proposed actions will be accomplished under timber sales covered by this EA for Alternative II - Proposed Action. The recommendation to close these roads incorporated information from the Transportation Management Objectives developed in the Big Creek Watershed Analysis.

Road No.	Miles Decom.	Miles Closed	Remarks	Management Objectives **
28-10-27.1	0.00		Previously decommissioned. Re- block after harvest.	1 & 4
28-10-34.4	0.10		Block at jct with 28-10-15.0	3 & 4
28-10-34.5	0.13		Block at jct with 28-10-15.0	3 & 4
29-10-9.3	0.00	0.20	Will be blocked by action with the 29-10-9.0 road.	1, 2, & 4
29-10-9.0 (Old)	0.34		Reblock after use.	1 & 4
29-10-9.0 (Old)	0.18		Block and decommission from west end of -9.0(new) east to Erfo block.	1 & 4
29-10-8.0	0.28		Block dirt portion only (from end landing of Ea U-8 to end of rd.)	1, 3, & 4
28-10-29.3	0.30		Block at jct with 28-10-29.2	1, 3, & 4
Spur-(N. end U-9)	0.10		Block at jct with 28-10-29.2	2 & 4
28-10-30.2	0.13		Block shortly past property line	1 & 4
28-10-31.1	0.18		Block at jct with 28-10-31.0	3 & 4
28-10-31.2	0.38		Block at jct with 29-10-6.0	1 & 4
29-10-6.0	0.63		Block at jct with 28-10-31.2	1 & 4
29-10-6.2	0.10		Block at jct with 29-10-6.1	1 & 4
29-10-6.1	0.19		Block past landing for unit.	4
Spur-S. of -6.1	0.10		Block at jct with 29-10-6.1 (West side of U-12)	4
29-11-1.0	0.60		Block at jct with 29-11-11.1	1 & 4
29-11-24.0	0.18		Block at jct with Lone Rock spur	1 & 4
29-11-11.6 (pvt)	0.00		Reestablish stream crossing.	1 & 2
Dirt spur U-26	0.00		Double block and decommission.	1 & 2
29-11-11.4 (pvt)	0.00		Block lateral dirt spurs at the same time road is improved.	1 & 2
29-11-11.2	0.10		Block at jct with 29-11-11.0. Decommission to self-closed portion.	1 & 4
29-11-14.0	0.26		Block at jct with 29-11-15.3	1 & 4
29-11-14.1	0.10		Block at jct with 29-11-15.3	1 & 4
29-11-15.3	0.21		Block at jct with 29-11-14.1	1 & 4
Spur U-29	0.01		Block by action for the 29-11-15.3 road.	4
Spur U-29	0.18		Block by action for the 29-11-15.3 road.	1 & 4
29-11-23.6	0.24		Block at jct with 29-11-23.0	1 & 4
29-11-10.1	0.20		Block at jct with 29-11-22.0	1, 3, & 4
29-11-12.0*	0.00	0.40	Block at jct with 29-11-13.3, storm proof stream crossing culverts.	1, 3, & 4
29-11-13.2*	0.00	2.10	Blocked with action for -12.0 road, storm proof stream crossing culverts.	1, 3, & 4
29-11-29.0 por. H	0.00	2.00	Gate at jct with 28-10-31.0	3 & 4
28-10-29.2	0.00	0.70	Blocked by action for Road No. 28-11-29.0.	4
Total	5.22	5.40		

Decom. = Decommission (Block and left in condition to self maintain. Remove stream crossing culverts ensure hydrological functions.)

Closed = Temporarily Closed (Roads blocked with a gate or other structure)

* These roads will be blocked and stream crossing culverts storm proofed instead of being removed.

** 1 = Wildlife, 2 = Aquatic Conservation Strategy, 3 = Phytrophthora lateralis control, 4 = Road Density

Current Open Road Density: 4.04 mi/sq.mi. (Updated)
New Open Road Density: 3.29 mi/sq.mi.

g:\cb\mralt-sales\ea-s\bigcreek\decom

**Big Creek Analysis Area EA
Road Closure Recommendations
Alternative III - Alternative Action**

The following proposed actions will be accomplished under timber sales covered by this EA for Alternative III - Alternative Action. The recommendation to close these roads incorporated information from the Transportation Management Objectives developed in the Big Creek Watershed Analysis.

Road No.	Miles Decom.	Miles Closed	Remarks	Management Objectives **
28-10-27.3	0.22		Block at jct with 28-10-34.3	4
28-10-27.4	0.10		Blocked by action with the -27.3 road	4
Sandy Land Spur	0.15		Block at jct. with 28-10--34.3 (EA Unit 2)	4
28-10-27.1	0.00		Previously decommissioned. Re- block after harvest.	1 & 4
28-10-34.4	0.10		Block at jct with 28-10-15.0	3 & 4
28-10-34.5	0.13		Block at jct with 28-10-15.0	3 & 4
29-10-9.3	0.20		Will be blocked by action with the 29-10-9.0 road.	1,2, & 4
29-10-9.0 (Old)	0.34		Reblock after use.	1 & 4
29-10-9.0 (Old)	0.18		Block and decommission from west end of -9.0(new) east to Erfo block.	1 & 4
29-10-8.0	0.28		Block dirt portion only (from end landing of Ea U-8 to end of rd.)	1, 3, & 4
28-10-29.3	0.00	0.30	Block at jct with 28-10-29.2	1, 3, & 4
Spur-(N. end U-9)	0.10		Block at jct with 28-10-29.2	2 & 4
28-10-30.2	0.13		Block shortly past property line	1 & 4
28-10-31.1	0.18		Block at jct with 28-10-31.1	3 & 4
28-10-31.2	0.38		Block at jct with 29-10-6.0	1 & 4
29-10-6.0	0.63		Block at jct with 28-10-31.2	1 & 4
29-10-6.2	0.10		Block at jct with 29-10-6.1	1 & 4
29-10-6.1	0.19		Block past landing for unit.	4
Spur-S. of -6.1	0.10		Block at jct with 29-10-6.1 (West side of U-12)	4
29-11-1.0	0.60		Block at jct with 29-11-11.1	1 & 4
29-11-24.0	0.18		Block at jct with Lone Rock spur	1 & 4
29-11-11.6 (pvt)	0.00		Reestablish stream crossing.	1 & 2
Dirt spur U-26	0.00		Double block and decommission.	1 & 2
29-11-11.4 (pvt)	0.00		Block lateral dirt spurs at the same time road is improved.	1 & 2
29-11-11.2	0.10		Block at jct with 29-11-11.0. Decommission to self-closed portion.	1 & 4
29-11-14.0	0.26		Block at jct with 29-11-15.3	1 & 4
29-11-14.1	0.10		Block at jct with 29-11-15.3	1 & 4
29-11-15.3	0.21		Block at jct with 29-11-14.1	1 & 4
Spur U-29	0.01		Block by action for the 29-11-15.3 road.	4
Spur U-29	0.18		Block by action for the 29-11-15.3 road.	1 & 4
29-11-23.6	0.24		Block at jct with 29-11-23.0	1 & 4
29-11-10.1	0.20		Block at jct with 29-11-22.0	1, 3, & 4
Spur -east of U-38	0.05		Block at jct with 29-11-21.2	3 & 4
29-11-12.0*	0.00	0.40	Block at jct with 29-11-13.3, storm proof stream crossing culverts.	1, 3, & 4
29-11-13.2*	0.00	2.10	Blocked with action for -12.0 road, storm proof stream crossing culverts.	1, 3, & 4
29-11-29.0 por. H	0.00	2.00	Gate at jct with 28-10-31.0	3 & 4
28-10-29.2	0.00	0.70	Blocked by action for Road No. 28-11-29.0.	4
Total	5.64	5.50		

Decom. = Decommission (Block and left in condition to self maintain. Remove stream crossing culverts ensure hydrological functions.)

Closed = Temporarily Closed (Roads blocked with a gate or other structure)

* These roads will be blocked and stream crossing culverts storm proofed instead of being removed.

** 1 = Wildlife, 2 = Aquatic Conservation Strategy, 3 = Phytophthora lateralis control,
4 = Road Density

Current Open Road Density: 4.04 mi/sq.mi. (Updated)
New Open Road Density: 3.25 mi/sq.mi.

g:\cb\mralt-sales\ea-s\bigcreek\decom